Black Bear
Management Report
of survey-inventory activities
1 July 1998–30 June 2001

Carole Healy, Editor
Alaska Department of Fish and Game
Division of Wildlife Conservation
December 2002

ADF&G

Please note that population and harvest data in this report are estimates and may be refined at a later date.

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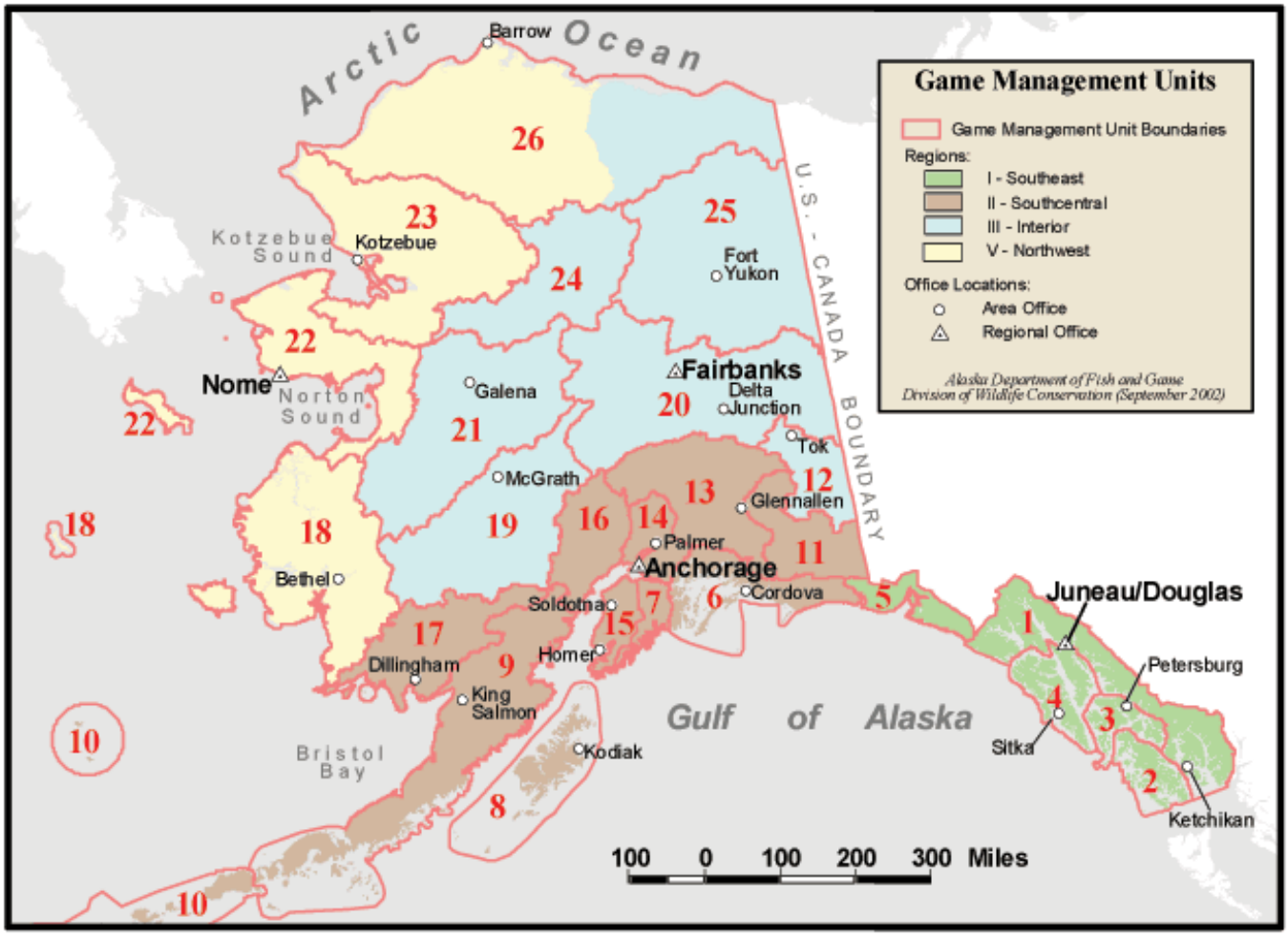
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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 6 (10,140 mi^2)

GEOGRAPHIC DESCRIPTION: Prince William Sound and north Gulf of Alaska Coast

BACKGROUND

Black bears are common throughout most of Unit 6, with the exception of Montague, Hinchinbrook, several smaller islands in Prince William Sound (PWS), and Kayak and Middleton islands along the North Gulf of Alaska Coast (NGC). Density is highest in western PWS and lower in eastern PWS and along the NGC. Modafferi (1978) roughly estimated densities of 1.4, 0.6, and 0.7 bears/mi^2 in western, eastern PWS, and along the NGC, respectively. Other density estimates for good habitat in PWS have ranged from 1.0 to 25 bears/mi^2 (Grauvogal 1967, McIlroy 1970, Modafferi 1982).

Hunting pressure may have occasionally affected local populations. McIlroy (1970) reported that declining harvest and hunter success and increasing hunter-days per harvested bear indicated a declining black bear population in Valdez arm between 1966 and 1969. Relatively high hunter effort documented by Modafferi (1978) around Whittier in 1977 may have also indicated a reduced population.

Factors other than hunting that may affect black bear populations in Unit 6 are food abundance and adverse weather. Competition and predation by brown bears may also locally influence black bear numbers.

Harvest monitoring began in 1973 with mandatory sealing of hides. Before this requirement, annual harvests ranged from "practically nil" (Robards 1954) to over 100 during 1965 and 1966 (McIlroy 1970). Sealing records indicated an average annual take of 118 bears from 1973 to 1983, 232 from 1984 to 1994, and 294 from 1995 to 2000. A historic high harvest of 279 was reached in 1986. This record was surpassed each year during this reporting period.

MANAGEMENT OBJECTIVES

The management objective for Unit 6 black bear is to maintain a black bear population that will sustain a 3-year average annual harvest of 200 bears composed of at least 75% males with a minimum average skull size of 17 inches.

METHODS

We sealed hides and skulls of all black bears in the reported harvest. Reported harvest included bears taken by licensed hunters and bears killed in defense of life or property. Staff checked each hide for sex identifiers and took skull measurements for total length and zygomatic width. We asked hunters to report harvest date, days hunted, location of harvest, and type of transportation used for access to their hunting area. We estimated unreported and illegal kills. Unreported harvest included wounding loss and bears taken by hunters and not sealed.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

We did not collect population data. Incidental observations by guides, charters, local hunters and harvest data indicated that distribution and general abundance increased throughout Unit 6, and is at a high level. This may have been in response to increasing escapement of pink salmon in western Prince William Sound during the 1990's, particularly during the last 3 years. Salmon escapement averaged 1.3 million during 1988–1998 and 2.0 million during 1999–2001 (ADFG Comm. Fish files). Highest density of black bears occurred in western PWS.

MORTALITY

Harvest

Season and Bag Limit. The open season for all hunters in Unit 6 was September 1 to June 30 and the bag limit was 1 bear.

Board of Game Actions and Emergency Orders. The Board of Game changed the season opening date for black bears from September 1 to August 20 beginning in regulatory year 2001 for Units 6A and 6B. This was to provide bear hunting opportunity for early-season goat hunters. No emergency orders were issued during the reporting period.

Hunter Harvest. Hunters killed 302, 362, and 427 bears in Unit 6 during the report period, respectively (Table 1). Most harvests (82 to 91%) were males, with most (77 to 85%) bears taken in Unit 6D. Hunter harvest during the past 5 regulatory years averaged 314, ranging from a high of 427 in 2000–01 to a low of 229 in 1996–97. The harvest has increased each year since 1995, more than doubling in size from the harvest of that year (195). Harvest density (bears killed per mi^2) was highest on Culross Island (0.6) followed by Esther Island (0.4) in Unit 6D.

The increasing harvest of black bears resulted from both higher bear density and increased access into western PWS. The new Whittier access road increased hunter traffic into western Unit 6D during regulatory year 1999–2000 (June only) and 2000–01, but overall use of the road was less than anticipated. Traffic counts by the Alaska Department of Transportation (ADOT) indicated that 14,521 Class A and B vehicles (passenger vehicles, RV's, and vehicles pulling trailers) used the road during May and June, 2001. The road was not open during May of 2000. The number of Class A and B vehicles using the road was nearly identical during June of 2000 and 2001, but decreased by 20% when all months (June–December) were included. Thus the

potential problem of annually increasing numbers of hunters in western PWS after the road opened has not yet developed.

Mean skull size among males harvested during the past 3 years was 16.8–17.2 inches (Table 2). The largest skulls (17.7 inches average) came from Unit 6A, and the smallest (16.7 inches) were reported in Unit 6C. Over the past 5 years, no trends were obvious.

Hunter Residency. Residents of Alaska who did not live in Unit 6 harvested most bears (55–61%) during this reporting period (Table 3). Nonresident hunters had the second highest total take (26–29%), followed by local residents of Unit 6 (12–17%). This pattern varied in Unit 6A, where most bears (52–75%) were harvested by nonresidents. It was also different in Unit 6C, where most bears (38–59%) were taken by local residents. The high harvest by local hunters in Unit 6C occurred because the Copper River Highway provided good access. Residency of successful hunters did not change significantly over the past 5 years.

Harvest Chronology. Most bears (56 to 63%) were taken in May during this reporting period (Table 4) and during the past 5 years. Black bears tend to move down to beaches after emerging from winter dens to feed on new forbes and grasses, making them more vulnerable to harvest during this period. Both in Alaska (Schwartz et. al. 1986) and Minnesota (Rogers 1987), den emergence was correlated with weather conditions.

Transport Methods. Most successful hunters used boats (64–76%) and airplanes (7–18%) for transportation during the past 3 years. Airplanes provided most (75–84%) of the transportation in Units 6A and 6B. Highway vehicles (53–67%), boats and 4-wheelers were important in Unit 6C (Table 6).

Other Mortality

I estimated that losses from hunters wounding black bears and not recovering them added 10–15% to the yearly take. This was recorded as part of the estimated unreported kill (Table 1).

CONCLUSIONS AND RECOMMENDATIONS

We achieved all management objectives. No season or bag limit changes are recommended.

Hunter success should be determined by requiring unsuccessful black bear hunters to report their activities on a mail-in hunter report. The data would be a valuable indicator of bear population trends and hunting effort that would improve future management decisions, particularly now that the road to Whittier is open allowing easier access to western Unit 6D.

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Table 1 Unit 6 black bear harvest, 1996–2000

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6A/1996																	
Fall 96	2	1	(33)	0	3	0	0	0	0	0	1	2	(67)	1	(33)	1	4
Spring 95	18	2	(10)	0	20	0	0	0	0	2	2	18	(90)	2	(10)	4	24
Total	20	3	(13)	0	23	0	0	0	0	2	3	20	(87)	3	(13)	5	28
6A/1997																	
Fall 97	4	0	(0)	0	4	0	0	0	0	0		4	(100)	0	(0)	0	4
Spring 98	18	2	(10)	2	22	0	0	0	0	3		18	(90)	2	(10)	5	25
Total	22	2	(8)	2	26	0	0	0	0	3	0	22	(92)	2	(8)	5	29
6A/1998																	
Fall 98	15	1	(6)	0	16	0	0	0	0	2	0	15	(94)	1	(6)	2	18
Spring 99	25	3	(11)	0	28	0	0	0	0	3	1	25	(89)	3	(11)	4	32
Total	40	4	(9)	0	44	0	0	0	0	5	1	40	(91)	4	(9)	6	50
6A/1999																	
Fall 99	3	1	(25)	0	4	0	0	0	0	0		3	(75)	1	(25)	0	4
Spring 00	16	1	(6)	0	17	0	0	0	0	2		16	(94)	1	(6)	2	19
Total	19	2	(10)	0	21	0	0	0	0	2	0	19	(90)	2	(10)	2	23

Table 1 Continued

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6A/2000																	
Fall 00	3	0	(0)	0	3	0	1	0	1	0	0	4	(100)	0	(0)	1	5
Spring 01	15	0	(0)	0	15	0	0	0	0	2	0	15	(100)	0	(0)	2	17
Total	18	0	(0)	0	18	0	1	0	1	2	0	19	(100)	0	(0)	3	22
6B/1996																	
Fall 96	2	0	(0)	0	2	0	0	0	0	0	1	2	(100)	0	(0)	1	3
Spring 95	4	0	(0)	1	5	0	0	0	0	1	1	4	(100)	0	(0)	3	7
Total	6	0	(0)	1	7	0	0	0	0	1	2	6	(100)	0	(0)	4	10
6B/1997																	
Fall 97	0	0	(0)	0	0	0	0	0	0	0	0	0	(0)	0	(0)	0	0
Spring 98	6	2	(25)	0	8	0	0	0	0	1	0	6	(75)	2	(25)	1	9
Total	6	2	(25)	0	8	0	0	0	0	1	0	6	(75)	2	(25)	1	9
6B/1998																	
Fall 98	2	0	(0)	0	2	0	0	0	0	0	0	2	(0)	0	(0)	0	2
Spring 99	1	0	(0)	0	1	0	0	0	0	0	0	1	(100)	0	(0)	0	1
Total	3	0	(0)	0	3	0	0	0	0	0	0	3	(100)	0	(0)	0	3

Table 1 Continued

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6B/1999																	
Fall 99	2	0	(0)	0	2	0	0	0	0	0	0	2	(0)	0	(0)	0	2
Spring 00	8	0	(0)	0	8	0	0	0	0	1	0	8	(100)	0	(0)	1	9
Total	10	0	(0)	0	10	0	0	0	0	1	0	10	(100)	0	(0)	1	11
6B/2000																	
Fall 00	0	0	(0)	0	0	0	0	0	0	0	0	0	(0)	0	(0)	0	0
Spring 01	6	0	(0)	1	7		0	0	0	1	0	6	(0)	0	(0)	2	8
Total	6	0	(0)	1	7	0	0	0	0	1	0	6	(100)	0	(0)	2	8
6C/1996																	
Fall 96	6	3	(33)	0	9	0	1	2	0	1	1	7	(58)	5	(42)	2	14
Spring 95	8	3	(27)	0	11	3	1	0	0	1	1	9	(75)	3	(25)	2	14
Total	14	6	(30)	0	20	3	2	2	0	2	2	16	(67)	8	(33)	4	28
6C/1997																	
Fall 97	4	5	(56)	0	9	0	1	0	0	1	0	5	(50)	5	(50)	1	11
Spring 98	15	4	(21)	0	19	4	0	0	0	2	0	15	(79)	4	(21)	2	21
Total	19	9	(32)	0	28	4	1	0	0	3	0	20	(69)	9	(31)	3	32

Table 1 Continued

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6C/1998																	
Fall 98	5	1	(17)	0	6	0	0	1	0	1	0	5	(71)	2	(29)	1	8
Spring 99	12	3	(20)	0	15	0	0	0	1	2	0	12	(80)	3	(20)	3	18
Total	17	4	(19)	0	21	0	0	1	1	3	0	17	(77)	5	(23)	4	26
6C/1999																	
Fall 99	10	2	(17)	0	12	0	0	1	0	1	0	10	(77)	3	(23)	1	14
Spring 00	17	3	(15)	0	20	5	0	0	0	2	1	17	(85)	3	(15)	3	23
Total	27	5	(16)	0	32	5	0	1	0	3	1	27	(82)	6	(18)	4	37
6C/2000																	
Fall 00	8	2	(20)	0	10	0	0	0	0	1	0	8	(80)	2	(20)	1	11
Spring 01	20	8	(29)	0	28	8	1	0	0	3	0	21	(72)	8	(28)	3	32
Total	28	10	(26)	0	38	8	1	0	0	4	0	29	(74)	10	(26)	4	43
6D/1996																	
Fall 96	24	1	(31)	1	36	0	2	0	0	2	2	26	(70)	11	(30)	5	42
Spring 97	118	2	(16)	2	143	5	0	0	0	10	10	11	(84)	23	(16)	22	163
Total	142	3	(19)	3	179	5	2	0	0	12	12	14	(81)	34	(19)	27	205

Table 1 Continued

Subunit/ Regulatory year	Reported									Estimated kill		Total estimated kill					
	Hunter kill						Nonhunting kill										
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
6D/1997																	
Fall 97	9	5	(36)	0	14	0	2	2	0	2	0	11	(61)	7	(39)	2	20
Spring 98	149	25	(14)	1	175	12	0	0	0	21	0	149	(86)	25	(14)	22	196
Total	158	30	(16)	1	189	12	2	2	0	23	0	160	(83)	32	(17)	24	216
6D/1998																	
Fall 98	25	14	(36)	0	39	0	1	1	0	5	0	26	(63)	15	(37)	5	46
Spring 99	164	28	(15)	3	195	9	0	0	0	23	1	164	(85)	28	(15)	27	219
Total	189	42	(18)	3	234	9	1	1	0	28	1	190	(82)	43	(18)	32	265
6D/1999																	
Fall 99	36	15	(29)	0	51	0	2	1	0	6		38	(70)	16	(30)	6	60
Spring 00	208	39	(16)	1	248	15	0	0	0	30	1	208	(84)	39	(16)	32	279
Total	244	54	(18)	1	299	15	2	1	0	36	1	246	(82)	55	(18)	38	339
6D/2000																	
Fall 00	32	12	(27)	0	44	0	1	0	0	6	0	33	(73)	12	(27)	6	51
Spring 01	264	55	(17)	1	320	17	1	0	0	38	0	265	(83)	55	(17)	39	94
Total	296	67	(18)	1	364	17	2	0	0	44	0	298	(82)	67	(18)	45	410

Table 1 Continued

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
Year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
UNIT 6																	
TOTAL																	
1996																	
Fall 96	34	15	(31)	1	50	0	3	2	0	6	5	37	(69)	17	(31)	12	66
Spring 95	148	28	(16)	3	179	8	1	0	0	21	14	149	(84)	28	(16)	38	215
Total	182	43	(19)	4	229	8	4	2	0	27	19	186	(81)	45	(19)	50	281
1997																	
Fall 97	17	10	(37)	0	27	0	3	2	0	3	0	20	(63)	12	(38)	3	35
Spring 98	189	34	(15)	3	226	16	0	0	0	27	0	189	(85)	34	(15)	30	253
Total	206	44	(18)	3	253	16	3	2	0	30	0	209	(82)	46	(18)	33	288
1998																	
Fall 98	47	16	(25)	0	63	0	1	2	0	7	0	48	(73)	18	(27)	7	73
Spring 99	202	34	(14)	3	239	9	0	0	1	29	2	202	(86)	34	(14)	35	271
Total	249	50	(17)	3	302	9	1	2	1	36	2	250	(83)	52	(17)	42	344
1999																	
Fall 99	51	18	(26)	0	69	0	2	2	0	8	0	53	(73)	20	(27)	8	81
Spring 00	249	43	(15)	1	293	20	0	0	0	35	2	249	(85)	43	(15)	38	330
Total	300	61	(17)	1	362	20	2	2	0	43	2	302	(83)	63	(17)	46	411

Table 1 Continued

Subunit/	Reported																
Regulatory	Hunter kill						Nonhunting kill			Estimated kill		Total estimated kill					
year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported	Illegal	M	(%)	F	(%)	Unk.	Total
2000																	
Fall 00	43	14	(25)	0	57	0	2	0	1	8	0	45	(76)	14	(24)	9	68
Spring 01	305	63	(17)	2	370	25	2	0	0	44	0	307	(83)	63	(17)	46	416
Total	348	77	(18)	2	427	25	4	0	1	52	0	352	(82)	77	(18)	55	484

Table 2 Unit 6 black bear harvest mean skull size (length + width), 1996–2000

Subunit	Regulatory year	Males		Females	
		Mean (in)	*n*	Mean (in)	*n*
6A	1996–97	17.8	20	16.7	3
	1997–98	18.0	21	15.5	2
	1998–99	17.9	41	16.4	4
	1999–00	17.5	20	16.4	1
	2000–01	17.8	19		0
6B	1996–97	16.8	11	15.4	5
	1997–98	16.7	18	15.0	8
	1998–99	17.0	17	15.8	5
	1999–00	16.5	28	15.3	5
	2000–01	16.5	28	15.2	10
6C	1996–97	17.6	11	15.7	3
	1997–98	16.8	14	15.0	1
	1998–99	15.9	15	16.0	2
	1999–00	16.8	11	15.4	5
	2000–01	16.7	18	15.0	8

Table 2 Continued

Subunit	Regulatory year	Males		Females	
		Mean (in)	*n*	Mean (in)	*n*
6D	1996–97	16.8	111	15.6	22
	1997–98	17.0	139	15.3	24
	1998–99	16.8	186	15.6	42
	1999–00	17.2	237	15.4	53
	2000–01	16.8	293	15.4	61
UNIT 6	1996–97	16.8	168	15.7	40
TOTAL	1997–98	17.1	194	15.3	42
	1998–99	16.9	247	15.9	51
	1999–00	17.1	295	15.7	59
	2000–01	17.2	346	15.3	71

Table 3 Unit 6 black bear successful hunter residency, 1996–2000

Subunit	Regulatory year	Local resident [a]	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total Successful hunters [a]
6A	1996–97	2	(9)	5	(22)	16	(70)	23
	1997–98	3	(12)	6	(23)	16	(62)	26
	1998–99	9	(20)	5	(11)	30	(68)	44
	1999–00	2	(10)	8	(38)	11	(52)	21
	2000–01	1	(5)	3	(15)	15	(75)	20
6B	1996–97	2	(29)	3	(43)	2	(29)	7
	1997–98	0	(0)	4	(50)	4	(50)	8
	1998–99	0	(0)	1	(33)	2	(67)	3
	1999–00	3	(30)	3	(30)	4	(40)	10
	2000–01	0	(0)	3	(43)	4	(57)	7
6C	1996–97	14	(70)	3	(15)	2	(10)	20
	1997–98	14	(50)	11	(39)	3	(11)	28
	1998–99	10	(45)	9	(41)	2	(9)	22
	1999–00	20	(59)	12	(35)	2	(6)	34
	2000–01	15	(38)	17	(44)	6	(15)	39

Table 3 Continued

Subunit	Regulatory year	Local resident [a]	(%)	Nonlocal resident	(%)	Nonresident	(%)	Total Successful hunters [b]
6D	1996–97	21	(12)	126	(70)	30	(17)	179
	1997–98	21	(11)	114	(60)	54	(29)	189
	1998–99	27	(11)	153	(65)	54	(23)	236
	1999–00	19	(6)	193	(64)	87	(29)	301
	2000–01	35	(10)	239	(65)	89	(24)	365
UNIT 6	1996–97	39	(17)	137	(60)	50	(22)	229
TOTAL	1997–98	38	(15)	137	(54)	77	(30)	253
	1998–99	46	(15)	168	(55)	88	(29)	305
	1999–00	44	(12)	216	(59)	104	(28)	366
	2000–01	51	(12)	262	(61)	114	(26)	431

[a] Residents of Unit 6.

[b] Total includes hunters with unknown residency and subunit.

Table 4 Unit 6 black bear harvest chronology percent by harvest period, 1996–2000.

		Harvest periods [a]										
	Regulatory	September		October		April		May		June		
Subunit	year	1–15	16–30	1–15	16–31	1–15	16–30	1–15	16–31	1–15	16–30	*n*
6A	1996–97	0	9	4	0	0	35	43	4	0	4	23
	1997–98	12	4	4	0	0	15	42	19	0	4	26
	1998–99	7	9	14	7	0	2	32	25	5	0	44
	1999–00	10	0	0	10	0	10	33	38	0	0	21
	2000–01	0	11	6	0	0	6	33	44	0	0	18
6B	1996–97	14	14	0	0	0	0	29	43	0	0	7
	1997–98	0	0	0	0	0	0	50	50	0	0	8
	1998–99	33	33	0	0	0	0	0	33	0	0	3
	1999–00	0	25	25	0	0	25	0	25	0	0	4
	2000–01	0	0	0	0	0	0	86	14	0	0	7
6C	1996–97	15	20	10	0	0	10	10	25	0	10	20
	1997–98	14	7	7	0	0	0	29	32	7	0	28
	1998–99	10	14	5	0	0	0	5	48	14	5	21
	1999–00	19	6	13	0	0	0	13	41	9	0	32
	2000–01	13	8	5	0	0	3	8	37	21	5	38
6D	1996–97	13	4	2	0	0	1	20	50	9	0	179
	1997–98	3	2	2	1	0	1	26	44	19	2	189
	1998–99	8	4	2	1	0	0	19	38	23	5	231
	1999–00	13	3	2	0	0	1	14	43	20	4	288
	2000–01	7	4	1	0	0	1	16	48	20	4	364
UNIT 6	1996–97	12	7	3	0	0	5	22	43	7	1	229
TOTAL [b]	1997–98	5	3	2	0	0	2	30	40	15	2	253
	1998–99	8	6	4	2	0	0	19	37	19	4	299
	1999–00	13	3	3	1	0	2	15	42	17	3	345
	2000–01	7	5	1	0	0	1	17	46	19	4	427

[a] Bears were not taken during November-March.
[b] Total includes bears taken in unknown subunits.

Table 5 Unit 6 black bear harvest percent by transport method, 1996 to 2000.

Subunit	Regulatory year	Percent of harvest								
		Airplane	Horse	Boat	3- or 4-Wheeler	Snow-machine	ORV	Highway Vehicle	Unknown	*n*
6A	1996–97	78	0	0	13	0	0	9	0	23
	1997–98	77	0	0	8	0	0	12	4	26
	1998–99	84	0	0	11	0	0	2	2	45
	1999–00	76	0	5	5	0	0	10	5	21
	2000–01	75	0	5	5	0	0	0	15	20
6B	1996–97	71	0	0	0	0	0	29	0	7
	1997–98	100	0	0	0	0	0	0	0	8
	1998–99	67	0	0	0	0	0	33	0	3
	1999–00	63	0	0	0	0	0	25	13	8
	2000–01	29	0	0	29	0	0	43	0	7
6C	1996–97	0	0	10	15	0	0	65	10	20
	1997–98	0	0	14	21	0	0	29	36	28
	1998–99	0	0	17	13	4	0	61	4	23
	1999–00	3	0	18	24	0	0	53	3	34
	2000–01	3	0	8	18	0	0	67	5	39

Table 5 Continued

Subunit	Regulatory year	Percent of harvest								n
		Airplane	Horse	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway Vehicle	Unknown	
6D	1996–97	9	0	82	2	0	0	7	0	179
	1997–98	4	0	83	5	0	0	6	3	189
	1998–99	6	0	82	3	0	0	5	3	237
	1999–00	7	0	86	2	0	0	4	1	303
	2000–01	4	0	89	2	0	0	5	1	366
UNIT 6	1996–97	17	0	65	4	0	0	13	1	229
TOTAL a	1997–98	14	0	64	7	0	0	9	6	253
	1998–99	18	0	64	5	1	0	9	3	308
	1999–00	12	0	73	4	0	0	9	2	366
	2000–01	7	0	76	4	0	0	11	2	432

[a] Total includes bear taken in unknown subunits.

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNITS: 7 and 15 (8397 mi^2)

GEOGRAPHIC DESCRIPTION: Kenai Peninsula

BACKGROUND

Black bears are abundant throughout most of the Kenai Peninsula. In Unit 15A bear densities are estimated at 205 bears/1000 km^2 for areas within the 1947 burn and 265/1000 km^2 for the 1969 burn (Schwartz and Franzmann 1991). The popularity of black bear hunting and the number of bears harvested are increasing, especially during the past decade. A synopsis of past hunting regulations was provided in Del Frate (1993).

The Kenai Peninsula comprises primarily federally managed lands. The USDA Forest Service (Chugach National Forest, ca. 2,000 mi^2) is the principal landowner in Unit 7 along with the USDI Park Service (Kenai Fjords National Park 885 mi^2). In Unit 15 the U.S. Fish and Wildlife Service (Kenai National Wildlife Refuge) is responsible for management of 3062 mi^2. Municipal, private, state, and native corporation lands comprise the remainder of Unit 15.

Black bear research on the Kenai National Wildlife Refuge began in 1977 as part of a comprehensive predator-prey study. Numerous reports have been published that are increasing our understanding of black bear ecology and management (Franzmann and Schwartz 1986 and 1988, Schwartz and Franzmann 1983, 1989, 1991 and 1992; Schwartz et al. 1983 and 1987, and Smith 1984).

Spruce bark beetles (*Dendroctonus rufipennis*) have infested and killed many older stands of spruce trees on the Kenai Peninsula. Several prescriptive logging cuts have been initiated in response. To date, most logging has occurred on private land, although many state timber sales have been planned. Reduction of old-growth forests may be detrimental to black bears by removing protective cover, reducing food plants associated with old-growth forests, and increasing human disturbance by providing access into previously secure areas.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Maintain a black bear population that will sustain a 3-year average annual harvest of 250 bears composed of no more than 40% females.

METHODS

The department monitors the harvest of black bears through a mandatory sealing program established in 1973. Hides and skulls of all black bears reported killed are sealed with metal locking tags. Biological and demographic information is collected and entered on bear sealing forms. Harvest data are reported using the division's statewide harvest reporting system.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

The black bear population on the Kenai Peninsula is stable but will probably decrease slightly over the next 10 years because of fewer moose in the 1969 burn area and the loss of habitat through continuing human encroachment.

We estimated that black bears occupy 5880 mi^2 (15,053 km^2) of available habitat (Del Frate 1993). We then calculated a population of 3000 bears using Schwartz and Franzmann's (1991) lower density estimate. The density estimates for portions of Prince William Sound (McIlroy 1972) indicate the densities of black bears in coastal regions of the Kenai Peninsula may exceed 205 bears per 1000 km^2 (Schwartz and Franzmann 1991); however, further research is needed.

Distribution and Movements

Schwartz and Franzmann (1991) provided an excellent review of radiocollared black bear movements. One of the primary factors affecting distribution and movements of bears was the abundance and distribution of devil's club (*Oplopanax horridus*). Devil's club may be affected in areas where spruce bark beetles have killed most of the overstory spruce trees. USDA Forest Service is currently studying the effects of spruce bark beetles and logging of bark beetle-killed spruce trees on devil's club survival.

The productivity of black bears in specific areas was related to the number of moose calves consumed in the spring (Schwartz and Franzmann 1991). As plant succession progresses in the 1969 burn, available browse will decrease and the number of moose calves available to bears will decline. This may result in a decrease in black bear density in this area to levels similar to the 1947 burn.

MORTALITY

Harvest

Season and Bag Limit. The season was not closed in Units 7 and 15 and the bag limit was 2 bears; however, only 1 bear could be taken from 1 January through June 30 and 1 bear from 1 July through December 31. Cubs or females accompanied by cubs are protected. Bear baiting was allowed from 15 April to 15 June by registration permit (except in Resurrection Creek and its tributaries in Unit 7). Black bears may also be taken with the aid of dogs under a permit authorized by the Alaska Department of Fish and Game (ADF&G).

Board of Game Action and Emergency Orders. In the fall of 1995, the Board passed a proposal requiring hunters using bait to have completed an ADF&G-sponsored clinic on bear baiting. This regulation became effective in the spring of 1997 for Unit 15 and in 1998 for Unit 7. Also beginning in the spring of 1997, black bear hunters were required to salvage all edible meat from bears taken before June 1. This proposal was passed during the Spring 1996 Board of Game meeting. During the March 2001 BOG meeting a proposal by the Department to eliminate the use of fish at black bear bait stations was passed. This restriction was recommended by the Brown Bear Stakeholder group who felt fish at bait stations may attract brown bears.

Hunter Harvest. The 5-year mean annual harvest was 308 animals (range = 250–382 (Table 1). Females averaged 29% of the harvest during this same period. The 1998 harvest of 382 bears tied the record set in 1985. During the past 3 regulatory years, the total harvest has been above objectives, however the proportion of females in the harvest was within management objectives (<40%). The increasing trend in harvest needs to be monitored closely because we are at the upper levels of our objectives.

Bears taken at bait stations accounted for 21% of the harvest during the 5-year period 1996–2000 (Table 1). Hunters harvested an average of 75 bears over bait during the past 3 regulatory years, 1998–2000 (Table 2); 30% of bears taken over bait during this period were females. The ten-year average of 204 permittees and 319 bait stations appears to be relatively stable (Table 3).

Hunter Residency and Success. In 1998 local residents (residents of the Kenai Peninsula) accounted for 55% of the black bear harvest, nonlocal residents took 29%, and nonresidents took 13%. In 1999 local residents, nonlocal residents, and nonresidents accounted for 43%, 36%, and 20%, respectively. In 2000 local residents, nonlocal residents, and nonresidents accounted for 45%, 31%, and 21% of the black bear harvest, respectively (Table 4). The proportion of successful hunters has varied between local and nonlocal hunters during the last 10 years while the proportion of nonresidents has continued to increase.

Harvest Chronology. More bears were harvested during the spring (approximately 62% of all bears) than in the fall in each of the past 5 years (Table 5). Most bears taken in the spring were taken in May. During fall most of the bears were taken in September coincident with moose hunting season. Most bears taken in July were assumed to be nuisance bears taken by hunters.

Transport Methods. Boats, highway vehicles, and airplanes were important methods of transport for successful bear hunters in Units 7 and 15 (Table 6). From 1998–2000 boats were the predominant mode of transportation followed by highway vehicles and aircraft. In addition, 14–19% of hunters who took a bear reported walking as their means of transportation. It is unclear whether these hunters typically shot bears near their homes or reported walking from a secondary point of origin (i.e., trail head, recreational cabin, etc.).

Other Mortality

Schwartz and Franzmann (1991) estimated that hunter harvests represented 59% of all black bear mortality in Unit 15A. Other mortality included wounding loss (6%), starvation (3%), predation (11%), and unknown causes (20%).

HABITAT

Habitat degradation from development and forestry practices may threaten survival of black bears on some areas of the Kenai Peninsula. Logging vast areas of mature forest can have negative effects on black bears. Devil's club, an important forage species, declines in vigor after logging and exposure to full sunlight. Logging roads improve access to both legal and illegal traffic, which may also affect bear mortality.

NONREGULATORY MANAGEMENT PROBLEMS AND NEEDS

Illegal trafficking of bear parts including hides, claws, and gall bladders occurs on the Kenai. Although public reports indicate trafficking of bear parts occurs occasionally, no enforcement cases have been pursued.

CONCLUSIONS AND RECOMMENDATIONS

Black bears are an important big game species in Units 7 and 15, second only to moose in numbers of animals harvested. Bear hunting continues to increase in popularity because of a lengthy season, liberal bag limit, and an alternative meat source to other big game. If annual harvests continue to increase, regulatory changes may be necessary to decrease the harvest. Maintenance of a healthy bear population is necessary to ensure liberal recreational opportunities.

Conservative density estimates indicate the population is approximately 3000 bears. Information is needed for mountainous and coastal regions of the Kenai Peninsula to verify population estimates. Miller (1990) estimated an exploitation rate of 14.2% of the bears in his study area. Based on a population estimate of 3000 bears and applying his exploitation rate to the Kenai Peninsula, 426 bear mortalities can be sustained annually. Schwartz and Franzmann (1991) found that only 59% of bear mortalities were attributed to hunting in Unit 15A in their study area. Unknown causes (20%), wounding losses (6%) and natural causes (15%) accounted for the remainder. In their study they found that reported harvest accounted for approximately 70% of the human-caused mortality. They suggested that this percentage is minimal because of hunters' reluctance to report taking radiocollared bears. Conservatively, 70% of 426 allows an annual hunter harvest of 298 bears. This conservative calculation allows for other forms of human-caused mortality (wounding loss and unreported illegal kills). This calculation is higher than previously reported because we mistakenly included natural mortality (15%) in the harvest estimate. We recommend that a new management objective reflect this correction.

NEW MANAGEMENT OBJECTIVES RECOMMENDED

Maintain a black bear population that will sustain a 3-year average annual harvest of 300 bears composed of no more than 40% females.

Miller (1990) suggested it would be more important to monitor the number of females in the harvest rather than percentage of males. Taylor et al. (1987) noted the effects of hunting pressure on breeding females was critical in sustained yield management. The current management objectives recommend a limit to the number of females taken (maximum of 40%). Therefore, we would recommend that the maximum harvest of female bears not exceed 120. The average

harvest of female bears during this reporting period was 97 and was within these management objectives.

Hunters that intend to hunt from bait stations must have completed a bear baiting clinic. This clinic stresses good hunter ethics and encourages hunters to harvest male bears. Since this regulation became effective, the interest by black bear hunters to use bait has remained high through the participation at bear bait clinics. The total numbers of stations and permittees have remained relatively stable although the harvest has increased. The percentage of female bears taken by hunters using bait has declined with the exception of 2001. It appears that black bear bait clinics have provided hunters the tools to be more successful.

The Kenai National Wildlife Refuge implemented regulations in 1989 that concentrated hunters using bait into a small area in Unit 15A. A high concentration of evenly distributed bait stations increases the probability that bears would eventually encounter a bait station and a hunter. This type of baiting may eventually result in localized overharvest of bears. It is recommended the KNWR extend baiting opportunities to other parts of the refuge or alternate areas to disperse hunters.

No regulatory changes are recommended at this time. However, if the harvest of black bears continues to increase, regulatory changes may be necessary. One regulatory change worth considering would be to restrict the use of bait stations to archery hunters. This type of restriction may provide the needed reduction in harvest and maintain a lower proportion of females in the harvest.

Habitat degradation from development and forestry practices may threaten survival of black bears on some areas of the Kenai Peninsula. Logging vast areas of mature forest can have negative effects on black bears. Devil's club, an important forage species, declines in vigor after logging and exposure to full sunlight. Logging roads improve access to both legal and illegal traffic, which may also affect bear mortality.

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Table 1 Units 7 and 15 black bear harvest[a], 1990–2000

Regulatory	Reported Hunter Kill						Nonhunting Kill[a]			Total Estimated kill					
year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	(%)	F	(%)	Unk.	Total
1990															
Fall 90	42	23	(35)	2	67		2	2	0	44	(62)	25	(35)	2	71
Spring 91	100	41	(29)	4	145		1	0	1	101	(69)	41	(28)	5	147
Total	142	64	(31)	6	212	38	3	2	1	145	(67)	66	(30)	7	218
1991															
Fall 91	76	54	(42)	6	136		4	6	0	80	(55)	60	(41)	6	146
Spring 92	102	42	(29)	5	149		1	0	0	103	(69)	42	(28)	5	150
Total	178	96	(35)	11	285	37	5	6	0	183	(62)	102	(34)	11	296
1992															
Fall 92	87	53	(38)	2	142		3	2	1	90	(61)	55	(37)	3	147
Spring 93	100	59	(37)	3	162		0	0	0	100	(62)	59	(36)	3	162
Total	187	112	(37)	5	304	42	3	2	1	190	(61)	114	(37)	6	310
1993															
Fall 93	54	17	(24)	2	71		2	2	0	56	(73)	19	(25)	2	77
Spring 94	102	27	(21)	1	130		0	2	0	102	(77)	29	(22)	1	132
Total	156	44	(22)	3	201	46	2	4	0	158	(76)	48	(23)	3	209
1994															
Fall 94	56	21	(27)	1	78		5	1	0	61	(73)	22	(26)	1	84
Spring 95	124	44	(26)	0	168		1	1	0	125	(74)	45	(26)	0	170
Total	180	65	(27)	1	246	51	6	2	0	186	(73)	67	(26)	1	254
1995															
Fall 95	75	40	(35)	0	115		3	2	0	78	(65)	42	(35)	0	120
Spring 96	85	32	(27)	0	117		0	0	0	85	(73)	32	(27)	0	117
Total	160	72	(31)	0	232	45	3	2	0	163	(69)	74	(31)	0	237

Table 1 Continued

Regulatory	Reported Hunter Kill						Nonhunting Kill[a]			Total Estimated kill					
year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	M	(%)	F	(%)	Unk.	Total
1996															
Fall 96	58	37	(39)	0	95		0	0	0	58	(61)	37	(39)	0	95
Spring 97	116	35	(23)	1	152		0	3	0	116	(75)	38	(25)	1	155
Total	174	72	(29)	1	247	56	0	3	0	174	(70)	75	(30)	1	250
1997															
Fall 97	73	34	(31)	1	108		1	0	0	74	(68)	34	(31)	1	109
Spring 98	117	36	(24)	0	153		0	2	0	117	(75)	38	(25)	0	155
Total	190	70	(27)	0	260	49	1	2	0	191	(73)	72	(27)	1	264
1998															
Fall 98	110	74	(40)	0	184		3	2	2	113	(59)	76	(40)	2	191
Spring 99	142	45	(24)	2	189		0	1	1	142	(74)	46	(24)	3	191
Total	252	119	(32)	2	371	59	3	3	3	255	(67)	122	(32)	5	382
1999															
Fall 99	49	20	(29)	1	70		2	5	1	51	(65)	25	(32)	2	78
Spring 00	186	45	(19)	0	231		1	0	0	187	(81)	45	(19)	0	232
Total	235	65	(22)	1	301	90	3	5	1	238	(77)	70	(23)	2	310
2000															
Fall 00	76	31	(29)	0	107		6	5	0	82	(69)	36	(31)	0	118
Spring 01	149	65	(30)	0	214		2	0	0	151	(70)	65	(30)	0	216
Total	225	96	(30)	0	321	76	8	5	0	233	(70)	101	(30)	0	334

[a]Includes DLP kills, research mortalities, and other known human-caused accidental mortality.

Table 2 Units 7 and 15 black bear harvest over bait stations, 1991–2001

Calendar	Unit 7		Subunit 15A		Subunit 15B		Subunit 15C			
year	M	F	M	F	M	F	M	F	Total	%F
1991	19	2	6	9	0	0	2	0	38	(29)
1992	8	7	5	6	0	1	4	5	37[a]	(51)
1993	10	4	9	11	0	0	5	3	42	(43)
1994	25	7	10	2	0	0	2	0	46	(20)
1995	27	8	6	6	0	0	1	3	51	(33)
1996	23	10	9	3	0	0	0	0	45	(29)
1997	25	10	13	2	0	1	5	0	56	(23)
1998	23	8	12	5	1	0	0	0	49	(27)
1999	23	11	14	8	0	0	2	0	59 [a]	(32)
2000	41	13	23	7	0	0	5	1	90	(23)
2001	32	14	14	12	0	0	2	2	76	(37)

[a]One bear of unknown sex.

Table 3 Units 7 and 15 black bear baiting station information for the Kenai Peninsula, 1991–2001

Calendar year	Local residents[a]	Nonlocal residents	Non residents	Total permits	Total stations	Bears harvested
1991	100	79	0	179	299	38
1992	100	96	0	196	335	37
1993	127	114	4	245	423	42
1994	95	97	3	195	319	46
1995	91	109	6	206	337	51
1996	101	91	5	197	325	45
1997	111	114	4	229	365	56
1998	99	108	0	207	303	49
1999	62	84	0	146	211	59
2000	104	107	2	211	287	90
2001	103	106	2	209	290	76

[a] Resident of Unit 7 or 15.

Table 4 Units 7 and 15 black bear harvest by residency, 1990–2000

Regulatory year	Local[a] Resident	(%)	Nonlocal Resident	(%)	Nonresident	(%)	Residency Unknown	(%)	Total Successful Hunters[b]
1990/91	93	(44)	99	(47)	20	(9)	0	(0)	212
1991/92	118	(41)	145	(51)	22	(8)	0	(0)	285
1992/93	149	(49)	117	(38)	32	(11)	6	(2)	304
1993/94	79	(39)	96	(48)	15	(7)	11	(5)	201
1994/95	110	(45)	100	(41)	29	(12)	7	(3)	246
1995/96	135	(57)	74	(31)	22	(9)	5	(2)	237
1996/97	128	(51)	74	(29)	44	(18)	5	(2)	251
1997/98	128	(49)	83	(32)	51	(19)	1	(<1)	263
1998/99	211	(55)	112	(29)	51	(13)	9	(2)	382
1999/00	134	(43)	112	(36)	61	(20)	3	(1)	310
2000/01	151	(45)	104	(31)	70	(21)	9	(3)	334

[a] Resident of GMU 7 or 15.
[b] Includes non-sport bears

Table 5 Units 7 and 15 black bear harvest chronology percent by time period, 1990–2000

Regulatory year	Harvest Periods								
	July	August	September	October	November	April	May	June	*n*
1990/91	<1	2	18	10	0	<1	45	22	212
1991/92	1	9	30	8	0	1	39	13	285
1992/93	3	8	27	8	<1	3	41	9	304
1993/94	2	7	14	12	<1	1	42	21	201
1994/95	1	8	18	4	0	2	37	30	246
1995/96[a]	5	18	21	6	0	2	34	15	232
1996/97	4	12	19	4	0	<1	45	16	247
1997/98	3	9	22	7	0	2	39	18	264
1998/99	3	15	25	6	<1	1	30	19	382
1999/00	5	5	10	5	0	2	49	23	310
2000/01	2	11	15	7	0	3	43	19	334

[a]One bear was reported in December.

Table 6 Units 7 and 15 black bear harvest percent by transport method, 1990–2000

Regulatory year	Percent of Harvest									
	Airplane	Horse	Boat	3- or 4-Wheeler	Snowmachine	ORV	Highway vehicle	Walk	Unknown	*n*
1990/91	8	5	26	0	0	7	20	22	11	212
1991/92	15	3	28	2	<1	7	16	19	11	285
1992/93	21	5	21	4	0	<1	27	19	3	304
1993/94	15	3	28	3	0	0	34	16	1	201
1994/95	17	1	29	10	0	<1	19	18	0	246
1995/96	7	5	30	6	0	0	32	19	1	232
1996/97	15	2	28	7	0	<1	32	14	2	247
1997/98	11	6	33	10	0	0	25	13	2	264
1998/99	13	4	32	6	<1	0	26	14	4	382
1999/00	9	2	35	7	0	0	28	15	4	310
2000/01	7	2	37	7	0	0	24	19	3	334

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 11 (12,800 mi^2)

GEOGRAPHIC DESCRIPTION: Wrangell Mountains

BACKGROUND

Black bears are numerous in those portions of Unit 11 having favorable forested habitat. Harvests have averaged 8 (range = 1–14) black bears per year during the 1980s with wide yearly fluctuations in the number of bears taken. Black bears have been gaining status as desirable big game animals, as evidenced by the increase in average harvest to 15 (range = 8–21) black bears per year since 1990.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Maintain the existing population of black bears with a sex and age structure that will sustain a harvest composed of at least 60% males.

METHODS

We monitored the black bear harvest by interviewing successful hunters and by sealing black bears presented for examination. We measured skulls of sealed bears, determined sex of bears, and extracted a premolar tooth for aging.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Black bear surveys or censuses have not been conducted in Unit 11. However, field observations and harvest data indicate black bears are abundant in suitable habitat throughout the unit. The lower Chitina River Valley is especially favorable bear habitat with salmon available in a number of streams. National Park Service biologists estimated 100–200 black bears/1000km^2 in the McCarthy area during 2001 (Mason Reid, Wrangell St. Elias National Park biologist, pers. comm.) This figure approaches densities observed elsewhere in Southcentral Alaska.

MORTALITY

Harvest

Season and Bag Limit. There was no closed season for black bears in Unit 11 and the bag limit was 3 bears.

Board of Game Actions and Emergency Orders. The Board of Game passed a regulation that required the salvage of meat from black bears taken from 1 January to 31 May, starting in the spring of 1997.

Hunter Harvest. Hunters reported taking 17 black bears during the 2000–01 season, 20 during the 1999–00 season and 12 in 1998–99. Mean annual take of black bears for the last 5 years is 15 (Table 1). Males have composed 64% of the harvest for the last 5 years (1996–2000), down slightly from the 79% average reported from 1993–97. The mean skull size for males taken in 2000 was 16.0 inches, slightly below the 5-year mean of 16.3 inches. The average skull size of females both last year and for the last 5 years is 15.7 inches.

Hunter Residency and Success. Nonresident hunters have taken 20% of the harvest during the last 5 years (Table 2). Historically, nonresidents have averaged between 3 and 4 bears per year (range = 0–18), or 30% of the harvest in Unit 11 between 1973 and 1997. Most nonresidents reported using a guide and usually harvested a bear during the fall while hunting other big game species such as sheep. The percent of black bears in the harvest taken by local residents varied from 1 bears taken to 19% of the harvest (Table 2). Successful bear hunters spent an average of 3.4 days hunting during the 2000 season, slightly more time than the 3.2 day average reported for all successful bear hunters during the last 5 years.

Data from bear sealing certificates indicated 81% of successful hunters were specifically hunting black bears during this reporting period. The remainder reported taking a bear incidentally to other hunting activities. In the last 5 years, 68% of the successful hunters salvaged some or all of the bear meat. There was only 1 black bear reported taken over bait each year from 1990 to 1992, but 23 (27%) have been reported during the last 5 years (Table 1).

Harvest Chronology. May and August are the 2 most important months for harvesting black bears (Table 3). During the last 5 years, 47 (62%) bears were taken in the spring and 29 (38%) were taken in the fall. Since 1973, 61% of the black bear harvest occurred during the fall season. Chronology of harvest started to change in 1993, with spring harvests exceeding fall harvests, due to the increased interest in bear baiting during the spring by non-local Alaskan residents.

Transportation Methods. Highway vehicles and aircraft were the methods of transportation most often reported by successful black bear hunters (Table 4). Aircraft use was primarily by nonresidents on mixed-bag hunts during the fall.

Other Mortality

Remote rural residents continue their unreported harvests. These most likely involve DLP kills around remote cabins. Hunters taking a bear under DLP conditions are required to turn over the hide and skull to the Alaska Department of Fish & Game. Reporting is minimal because of the transportation difficulties in remote portions of the unit. Also, some locals consider black bears a

nuisance animal, damaging cabins and homesites. Some DLP bears are claimed in the sport harvest because of the liberal bag limit and no closed season.

CONCLUSIONS AND RECOMMENDATIONS

Interest in black bear hunting has increased over the past 7 years, and harvests are higher, although still low and quite variable between years. Much of the increase has occurred since 1993 and can be attributable to increased popularity of spring bear baiting. Spring harvests are now higher than the fall take and bears taken over bait account for 25% of the harvest. Males continue to predominate in the harvest, meeting management objectives for harvest composition. Even with the increased take in recent years, the harvest of black bears remains quite low for the amount of available habitat. Black bear numbers in Unit 11 are thought to be similar to other timbered areas in Southcentral Alaska, and current low harvest has little impact on unitwide bear numbers.

Because most of Unit 11 is included in Wrangell-St Elias Park/Preserve, the black bear population will always receive relatively light hunting pressure. National Park Service regulations prohibit hunting by nonlocal residents in portions of the unit designated as park. Subsistence hunting by local rural residents continues in these areas; however, aircraft cannot be used to access park areas but can be used in the preserve. This effectively closes much of the park to all hunting. As a result, most of the harvest is along the road system. No changes in season length or bag limits are recommended.

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Table 1 Unit 11 black bear harvest[a], 1995–2000

	Reported Hunter kill						Nonhunting kill[a]			Estimated kill						Total estimated kill
Regulatory year	M	F	(%)	Unk.	Total	Over bait	M	F	Unk.	Unreported Illegal	M	(%)	F	(%)	Unk.	Total
1995																
Fall 95	2	1	(33)	0	3	0	0	0	0	1	2	(67)	1	(33)	1	4
Spring 96	8	1	(11)	0	9	1	0	0	0	1	8	(89)	1	(11)	1	10
Total	10	2	(17)	0	12	1	0	0	0	2	10	(83)	2	(17)	2	14
1996																
Fall 96	3	1	(25)	0	4	0	0	0	0	1	3	(75)	1	(25)	1	5
Spring 97	10	4	(29)	0	14	7	0	0	0	1	10	(73)	4	(27)	1	15
Total	13	5	(28)	0	18	7	0	0	0	2	13	(70)	5	(30)	2	20
1997																
Fall 97	2	0	(0)	0	2	0	0	0	0	1	2	(100)	0	(0)	1	3
Spring 98	5	0	(0)	0	5	2	0	0	0	1	6	(100)	0	(0)	1	7
Total	7	0	(0)	0	7	2	1	0	0	2	8	(100)	0	(0)	2	10
1998																
Fall 98	3	3	(50)	0	6	0	0	0	0	1	3	(50)	3	(50)	1	7
Spring 99	5	1	(17)	0	6	5	0	0	0	1	5	(83)	1	(17)	1	7
Total	8	4	(33)	0	12	5	0	0	0	2	8	(67)	4	(33)	2	14
1999																
Fall 99	5	2	(25)	1	8	0	0	0	0	1	5	(72)	2	(28)	2	10
Spring 00	7	5	(42)	0	12	3	0	0	0	1	7	(58)	5	(42)	1	13
Total	12	7	(35)	1	20	3	0	1	0	2	12	(60)	8	(40)	3	24
2000																
Fall 00	3	4	(57)	0	7	0	0	0	0	1	3	(43)	4	(57)	1	8
Spring 01	5	5	(50)	0	10	5	0	0	0	1	5	(50)	5	(50)	1	11
Total	8	9	(53)	0	17	5	0	0	0	2	8	(47)	9	(53)	2	19

[a]Includes Defense of Life or Property kills, research mortalities, and other known human-caused accidental mortality.

Table 2 Unit 11 black bear successful hunter residency, 1995–2000

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
1995–96	2	(17)	4	(33)	6	(50)	12
1996–97	1	(6)	16	(88)	1	(6)	18
1997–98	1	(14)	6	(86)	0	(0)	7
1998–99	2	(17)	5	(42)	5	(42)	12
1999–00	4	(19)	10	(48)	7	(33)	21
2000–01	2	(12)	13	(76)	2	(12)	17

[a]Resident of Unit 11 or National Park Service subsistence community for Wrangell-St. Elias National Park/Preserve.

Table 3 Unit 11 black bear harvest chronology percent by month, 1995–2000

Regulatory year	Harvest periods												*n*
	July		August		September		October		April		May		June		
1995–96	0	(0)	0	(0)	3	(25)	0	(0)	1	(8)	8	(67)	0	(0)	12
1996–97	1	(5)	3	(17)	0	(0)	0	(0)	2	(11)	11	(61)	1	(5)	18
1997–98	0	(0)	2	(25)	1	(12)	0	(0)	0	(0)	5	(63)	0	(0)	8
1998–99	0	(0)	3	(25)	3	(25)	0	(0)	0	(0)	6	(50)	0	(0)	12
1999–00	1	(5)	4	(19)	4	(19)	0	(0)	1	(5)	8	(38)	3	(14)	21
2000–01	0	(0)	5	(29)	2	(12)	0	(0)	0	(0)	7	(41)	3	(18)	17

Table 4 Unit 11 black bear harvest percent by transport method, 1995–2000

Regulatory year	Percent of harvest							
	Airplane	Horse	Boat	3- or 4-Wheeler	Snowmachine	Highway vehicle	Walk	Unknown
n								
1995–96	6 (50)	0 (0)	0 (0)	0 (0)	0 (0)	2 (17)	4 (33)	0 (0)
12								
1996–97	2 (12)	0 (0)	0 (0)	8 (44)	0 (0)	8 (44)	0 (0)	0 (0)
18								
1997–98	1 (12)	0 (0)	1 (12)	0 (0)	0 (0)	3 (38)	2 (25)	1 (12)
8								
1998–99	5 (42)	0 (0)	0 (0)	2 (17)	0 (0)	2 (17)	3 (25)	0 (0)
12								
1999–00	6 (28)	0 (0)	4 (19)	0 (0)	0 (0)	9 (43)	2 (10)	0 (0)
21								
2000–01	3 (18)	0 (0)	2 (12)	1 (6)	0 (0)	8 (47)	2 (12)	1 (6)
17								

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 13 (23,000 mi^2)

GEOGRAPHIC DESCRIPTION: Nelchina Basin

BACKGROUND

Black bears are numerous in portions of Unit 13 with suitable forest habitat. Harvest data are not available before 1973, when the sealing of black bears became mandatory. Black bear harvests averaged 68 per year during the 1970s, 82 per year during the 1980s and 96 per year during the 1990s. The increasing harvest trend shows that black bears are gaining in status as a desirable big game animal, and black bear hunting is much more popular than in the past.

MANAGEMENT DIRECTION

MANAGEMENT OBJECTIVES

Maintain the existing population of black bears with a sex structure that will sustain a harvest of at least 60% males.

METHODS

Department staff monitors the black bear harvest by interviewing successful hunters and by sealing bears presented for examination. Data obtained at sealing include measuring skulls and determining sex of bears, hunter methods, means, and effort.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

A black bear population estimate was conducted in 1985 along a portion of the upper Susitna River in conjunction with the Susitna Hydroelectric Project (Miller 1987). Results indicated a density estimate of 90 black bears/1000 km^2. Females had an observed mean litter size of 2.1 (range = 1–4) cubs of the year and 1.9 (range = 1–3) yearlings. However, Miller considered the study area to be marginal black bear habitat, and not indicative of bear densities in more favorable forested habitat within the unit. Field observations and harvest data indicate black bears are abundant in large portions of 13D and 13E. A population estimate for Unit 13 has not

been attempted because density estimates for bears in more favorable or typical forested habitat are not available. Black bear densities, in the favorable habitats within Unit 13 are thought to be similar to densities in other portions of Southcentral Alaska. Trends in bear abundance have not been documented.

Distribution and Movements

Black bears usually inhabit forested habitats except during the fall and occasionally in spring when they move into shrub zones to feed on berries and succulent vegetation (Miller 1987).

MORTALITY

Harvest

Season and Bag Limit. There is no closed season on black bears in Unit 13, and the bag limit is 3 bears per year.

Board of Game Actions and Emergency Orders. The Board of Game passed a regulation that required the salvage of meat from black bears taken from 1 January to 31 May, starting in the spring of 1997.

Hunter Harvest. The reported harvest of black bears during the 2000–01 season was 105 bears, down from the 1998 harvest of 167, which was an all time record harvest for Unit 13 (Table 1). The reason for the 1998 harvest is unknown. Harvests the last 4 years remained above 100 bears a year and average approximately 30 bears a year more than the average harvest of 89 bears per year during the early 1990s. Males composed 69% (n = 71) of the 2000–01 harvest and females 31% (n = 33) with one sex unknown. Overall, males composed 66% of the harvest during this reporting period. Black bear harvests consisting of 60% or more males are considered sustainable.

Mean skull size for males was 16.8 inches in 2000–01, close to the 6-year (1995–01) mean of 16.7 inches. Mean skull size for females was 15.9 inches in the 2000–01 harvest, only slightly larger than the 6-year mean of 15.6 inches. The average skull size for males in 1998 was 17.0 and 15.8 for females, both above the long-term average. This suggests the harvest spike in 1998 was due to increased vulnerability of large bears and not due to a pulse of young bears from one or two large cub cohorts. No trends are evident in the average size of the black bears taken in Unit 13 during this reporting period. Large or prolonged changes in the average skull size of harvested bears suggest changes in population trends and abundance of black bears. Skull size is monitored because age data are not collected for black bears in this unit.

Annually, bears killed in subunit 13D account for 45% of the total Unit 13 harvest, followed by 13E with 35%, 13A with 9%, 13C with 5%, 13B with only 4%, and 2% in unknown subunits.

The DLP kill averaged 1 bear/year throughout this reporting period. Despite increased human settlement, reported DLP kills remain low because many DLP bears are likely sealed as sport harvests. With a 3-bear bag limit and no closed season, there is little incentive to report DLP black bears which would require surrendering the hide and skull to ADF&G per DLP regulations.

Hunting of black bears over bait is allowed during the spring. Registration of bait stations is required and hunters must follow special baiting regulations. The number of bears taken over bait in the 2000 season was 11 and the average for the reporting period was 14. The popularity of bear baiting has increased in recent years as only 5 black bears were taken over bait in 1994. During this report period, baiting accounted for 32% of the spring harvest.

Hunter Residency and Success. Nonresidents took 27 (26%) black bears during 2000–01 (Table 2). During the last 6 years, the black bear take by nonresidents has averaged 25 bears/year. This is an increase of 66% over the 1973–94 average of 15 bears/year. Residents of Unit 13 killed 17 (16%) black bears during 2000–01 and have averaged 20 (19%) bears/year throughout this reporting period. The remaining 60 bears (57%) harvested during 2000–01 were taken by nonlocal Alaska residents who also accounted for the largest portion (53%) of the Unit 13 black bear harvest during this report period.

Successful black bear hunters spent an average of 4.1 days in the field in 2000–01, similar to the average of 4.0 days/year during this report period. These data suggest that successful hunters are spending more time in the field to take a bear when compared to the 3.6 day average reported by all hunters since 1973. Effort data for 1998, the year of the record 167 bear harvest, indicates successful hunters spent only 3.4 days in the field. Such a high harvest with reduced hunting efforts suggests that some unexplained favorable hunting conditions occurred during 1998.

Harvest Chronology. During the 2000–01 season, the spring harvest was 48 (46%) bears, compared to 57 (54%) in the fall. During this reporting period, 43% of the Unit 13 black bear harvest occurred during spring. Most of the spring harvest is during May while September is the most important month during the fall season (Table 3). The high harvest reported in 1998 was fairly evenly distributed throughout the year thus no one event or time frame stands out as responsible for the increase. During the last 5 years, harvests during June, July and August have been an important component of the harvest (Table 3). The bears were killed during the summer when hides are poor, suggesting many of the kills were for meat or that a higher incidence of DLP bears were reported as sport kills.

Transport Methods. Among successful 2000–01 bear hunters, highway vehicles (32%) and aircraft (21%) were the most popular methods of transportation (Table 4). Aircraft use fluctuates considerably between years but was the most important method of transportation during the 1995–96 season. Surprisingly, 4-wheelers are not as important to black bear hunters as they are for hunters after other big game in Unit 13. One explanation for this pattern is that the best black bear habitat is heavily timbered and has fewer trails for ATV access. The combined importance of highway vehicles and walking indicates roadside black bear populations received the greatest hunting pressure.

Other Mortality

Miller (1987) observed 35% mortality among cubs of the year accompanying radiocollared females in the upper Susitna River study area. In this study, additional natural mortality also occurred among radiocollared adult black bears. Miller believed predation by brown bears was an important source of natural mortality for black bears of all age classes.

HABITAT

Assessment

Black bears in Unit 13 utilize extensive tracts of spruce forest and, to a lesser degree, forested land bordering rivers and surrounded by upland shrub zones. Currently, Units 13D and 13E have more black bears than other subunits and also have the most extensive areas of heavily timbered spruce forests. Current fire management objectives specify a reduction in fire suppression activities in remote portions of Unit 13 and a return to a natural fire regime. This may eventually result in an interspersion of forest stands in different successional stages that could reduce prime black bear habitat. Availability of salmon could also influence numbers of black bears in Units 13D and 13E; salmon provide an alternative source of nutrition unavailable in more interior units.

CONCLUSIONS AND RECOMMENDATIONS

Black bear harvests increased during this reporting period. It appears that black bears are becoming a more important primary game species rather than being taken incidentally to other species. This conclusion is supported by chronology data showing high harvests during periods when other big game hunting opportunities are limited. Methods and means data indicate baiting, a black bear-specific hunting method, has increased in popularity.

Harvest levels currently reported on black bears in Unit 13 are considered sustainable. Unit 13, especially subunits D and E, has extensive areas of forest habitat ideal for black bears. Access is extremely limited and harvests are low over much of the best black bear habitat. Transportation data indicate that most harvest occurs near the road system. Increased harvests along the road system have not resulted in a decline in the percent males or the average skull size of all bears in the harvest. Black bear numbers in areas of heavy hunting pressure are currently maintained by immigration from unharvested areas and by annual production. The fact that taking cubs and sows with cubs is prohibited ensures that productive females are afforded protection. Females would have to predominate in the harvest for a number of years before a population decline would be a concern.

Harvest data are not currently collected from unsuccessful black bear hunters; thus, we have no way of determining total hunting effort. There has been an increase in the number of hunters seeking information on black bears, and it appears that black bear hunting has become more popular. This trend is expected to continue as hunters seek alternative big game hunting opportunities because of increasing competition, shorter hunting seasons, and increased use of Tier II permit hunts for the more popular big game species. Data used to evaluate changes in hunting pressure and success rates are important in monitoring hunt conditions and, to some extent, bear abundance. Currently, this information is collected only from successful hunters. I recommend that a system to collect these data from unsuccessful hunters be developed and implemented. Additional changes to season length or bag limits are not recommended at this time.

LITERATURE CITED

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Table 1 Unit 13 black bear harvest[a], 1995–2000

Regulatory Year	Reported hunter kill						Nonhunting kill[a]			Estimated Kill Unreported Illegal						
	M	F	(%)	Unk.	Total	Over bait	M	F	Unk		M	(%)	F	(%)	Unk.	Total
1995–96																
Fall 95	28	15	(35)	0	43	0	0	0	0	3	28	(65)	15	(35)	3	46
Spring 96	31	14	(31)	0	45	11	0	0	0	3	31	(69)	14	(31)	3	48
Total	59	29	(33)	0	88	11	1	0	0	6	60	(67)	29	(33)	6	95
1996–97																
Fall 96	29	18	(38)	0	47	0	0	0	0	3	29	(62)	18	(38)	3	50
Spring 97	21	12	(34)	2	35	13	0	0	0	3	21	(64)	12	(36)	5	38
Total	50	30	(37)	2	82	13	2	1	0	6	52	(63)	31	(37)	8	91
1997–98																
Fall 97	32	26	(44)	1	59	0	0	0	0	3	32	(55)	26	(45)	4	62
Spring 98	31	13	(29)	1	45	17	0	0	0	3	31	(70)	13	(30)	4	48
Total	63	39	(38)	2	104	17	1	1	0	6	64	(62)	40	(38)	8	112
1998–99																
Fall 98	69	36	(34)	1	106	0	0	0	0	3	69	(66)	36	(34)	4	109
Spring 99	44	16	(26)	1	61	21	0	0	0	3	44	(73)	16	(27)	4	64
Total	113	52	(31)	2	167	21	3	2	0	6	116	(68)	54	(32)	8	178
1999–00																
Fall 99	34	24	(41)	1	59	0	0	0	0	3	34	(59)	24	(41)	4	62
Spring 00	31	12	(28)	0	43	12	0	0	0	3	31	(72)	12	(28)	3	46
Total	65	36	(35)	1	102	12	2	1	0	6	67	(64)	37	(36)	7	111
2000–01																
Fall 00	35	21	(37)	1	57	0	0	0	0	3	35	(63)	21	(38)	4	60
Spring 01	36	12	(25)	0	48	11	0	0	0	3	36	(75)	12	(25)	3	51
Total	71	33	(31)	1	105	11	0	1	0	6	71	(68)	34	(32)	7	112

[a]Includes Defense of Life or Property kills, research mortalities, and other known human-caused accidental mortality.

Table 2 Unit 13 black bear successful hunter residency, 1995–2000

Regulatory year	Local resident	(%)	Other resident	(%)	Nonresident	(%)	Successful hunters[a]
1995–96	21	(24)	42	(48)	21	(24)	87
1996–97	19	(24)	41	(53)	17	(22)	78
1997–98	23	(23)	54	(53)	23	(23)	101
1998–99	22	(13)	96	(57)	45	(27)	167
1999–00	17	(17)	51	(50)	31	(30)	102
2000–01	17	(16)	60	(57)	27	(26)	105

[a] Includes residency unknown hunters. Table 3. Unit 13 black bear harvest chronology percent by time period, 1995–2000

Table 3 Unit 13 black bear harvest chronology percent by month, 1995–2000

	Harvest periods														
Regulatory year	July		August		September		October		April		May		June		*n*
1995–96	3	(3)	21	(24)	18	(20)	1	(1)	1	(1)	27	(31)	17	(19)	88
1996–97	4	(5)	21	(26)	20	(24)	2	(2)	0	(0)	21	(26)	14	(17)	82
1997–98	7	(7)	15	(15)	36	(35)	1	(1)	2	(2)	29	(28)	13	(13)	103
1998–99	7	(4)	27	(16)	69	(41)	3	(2)	0	(0)	39	(23)	22	(13)	167
1999–00	6	(6)	15	(15)	36	(35)	2	(2)	0	(0)	18	(18)	25	(25)	102
2000–01	7	(7)	12	(11)	34	(32)	4	(4)	1	(1)	27	(26)	20	(19)	105

Table 4 Unit 13 black bear harvest (percent) by transport method, 1995–2000

Regulatory year	Airplane		Horse		Boat		3- or 4-wheeler		Snowmachine		ORV		Highway Vehicle		Walk		Other[a]		*n*
	Percent of harvest																		
1995–96	28	(32)	2	(2)	8	(9)	15	(17)	0	(0)	1	(1)	16	(18)	11	(13)	7	(8)	88
1996–97	16	(20)	0	(0)	16	(20)	11	(13)	0	(0)	1	(1)	24	(29)	11	(13)	3	(4)	82
1997–98	16	(15)	5	(5)	13	(13)	16	(15)	0	(0)	1	(1)	27	(26)	22	(21)	4	(4)	104
1998–99	37	(22)	5	(3)	14	(8)	31	(19)	0	(0)	0	(0)	48	(29)	25	(15)	7	(4)	167
1999–00	16	(16)	7	(7)	17	(17)	17	(17)	1	(1)	0	(0)	27	(26)	11	(11)	6	(6)	102
2000–01	22	(21)	2	(2)	12	(11)	18	(17)	1	(1)	1	(1)	34	(32)	13	(12)	2	(2)	105

[a]Other includes unknown

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 14 (6625 mi^2)

GEOGRAPHIC DESCRIPTION: Upper Cook Inlet

BACKGROUND

Harkness (1990) and Grauvogel (1990) estimated the black bear population size in Unit 14 at 750–1050 with a sustainable annual harvest of 83–158 bears. Griese (1999) reevaluated total available habitat and considered recent excessive harvest of sows to conclude that the number of black bears in Unit 14 approached the lower end of the range of 530–1080. Griese (1999) assumed a population near 700 for a maximum sustainable harvest of 24–30 sows.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

Two management goals were assigned to Unit 14 in 1976. In Units 14A and 14B the goal was to provide the greatest opportunity to participate in hunting black bears. In Unit 14C the goals were to provide an opportunity to hunt black bears under aesthetically pleasing conditions and to provide an opportunity to enjoy black bears by viewing and photography.

MANAGEMENT OBJECTIVES

The population objective is to maintain a population that appears to be largely unaffected by human harvest. The human-use objective is to provide liberal opportunities to hunt black bears with annual average harvests of less than 80 bears with the annual sow harvest not exceeding 30 (not to exceed 14 sows in Unit 14A or 8 sows in each of Units 14B and 14C).

METHODS

Department staff monitored the black bear harvest by sealing skulls and hides of bears shot by hunters or killed for other reasons. During sealing we measured skulls, determined sex, and recorded hunting effort, location, and date of kill. Hunters were asked if the kill was incidental, from a bait station, and if meat was salvaged. Bear baiting required a department permit with no more than 2 bait stations allowed per hunter.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Griese (1996) previously projected black bear numbers at 530–1080 in Unit 14. No additional data have become available to modify that approximation. Increased reports of bear-human conflicts may indicate an increasing population, however, more conflicts may simply be the result of increased human activity in bear habitat and increased habituation of bears.

MORTALITY

Harvest

Season and Bag Limit. During this reporting period, the open season in Unit 14A was September 1–May 25. In Unit 14C within Chugach State Park, open season was from the day after Labor Day to May 31. The remainder of Unit 14 had a no closed season. The bag limit was 1 bear in all portions of Unit 14. Baiting black bears was not allowed within Unit 14C. Baiting was allowed by registration permit between April 15 and May 25 in Unit 14A and between April 15 and May 31 in Unit 14B.

Board of Game Actions and Emergency Orders. A registration permit hunt was established beginning in the fall 2001 in Upper Eagle River from the day after Labor Day to June 15. Hunter education certification was required and hunting was not allowed within ¼ mile of Crow Pass Trail. The general season was extended to May 31 in the Chugach State Park Management Area starting in the spring of 2002.

Hunter Harvest. The bear harvest was slightly higher during 1998–2000 than the previous report periods (Table 1). During this period hunters reported an average annual kill of 113 bears, including an average of 28 (25%) sows. Thirty-four % of the harvest in Units 14A and 14B was by hunters using bait (Tables 2–3). In Unit 14C the average annual kill was 30 bears (Table 4), up from the average of 20 black bears during the 1996–98 period.

Baiting Participation. The number of hunters using bait during the report period in Unit 14 was close to the 13-year average of 157 permit holders (Table 5).

Hunter Residency and Success. During the report period Unit 14 residents averaged 90% of the harvest (Table 6).

Harvest Chronology. The peak of harvest in Unit 14 occurs during May, with a higher harvest during the second half of May (Table 7). Baiting plays a role in the large spring harvest. A second smaller peak in harvest of black bears occurs during September when hunters are in the field pursuing bears and other large game (Table 7).

Transport Methods. Most hunters in Unit 14 used ORV/ATVs and highway vehicles to access the field (Table 8).

Other Mortality

Nonhunting kills represented 15.3% of all reported mortality in Unit 14 (Tables 2–4) during this period. Units 14A and 14C were responsible for 20 and 28 reported nonhunting kills, respectively.

CONCLUSIONS AND RECOMMENDATIONS

Under current data collection methods, the population size objective is unverifiable. The population most likely remains between 500 and 1000 black bears.

Unit 14 human-use objectives were attained during this report period. The average annual harvest of 113 bears was higher than the management objective of 80 bears. There is no indication, however, of an overharvest. Average sow harvest of 28 bears was less than the estimated allowable harvest of 30 females in Unit 14.

Kills from defense of life or property remain high. Continued expansion of the human population into areas occupied by bears has resulted in increased conflicts. Providing information and education to the public remains a high priority in Unit 14. There is a segment of the public who will not tolerate bears in close proximity to homes and are unwilling to keep food/garbage sources from becoming available to bears. Therefore, there is a need to start enforcing the law that prohibits negligently leaving human food, pet food, or garbage in a manner that attracts bears.

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Table 1 Unit 14 black bear hunter harvest composition, 1973–2000

Regulatory	Reported Harvest					
Year	Male	(%)[a]	Female	(%)[a]	Unk	Total
1973–74	54	71%	22	29%	3	79
1974–75	22	58%	16	42%	9	47
1975–76	50	62%	31	38%	9	90
1976–77	25	61%	16	39%	7	48
1977–78	24	59%	17	41%	8	49
1978–79	27	61%	17	39%	11	55
1979–80	37	71%	15	29%	6	58
1980–81	62	69%	28	31%	10	100
1981–82	58	74%	20	26%	9	87
1982–83	45	67%	22	33%	8	75
1983–84	52	68%	24	32%	10	86
1984–85	48	59%	34	41%	6	88
1985–86	55	56%	44	44%	9	108
1986–87	67	55%	55	45%	9	131
1987–88	75	60%	49	40%	9	133
1988–89	56	63%	33	37%	8	97
1889–90	61	64%	35	36%	5	101
1990–91	47	67%	23	33%	1	71
1991–92	60	70%	26	30%	4	90
1992–93	59	71%	24	29%	3	86
1993–94	30	65%	16	35%	1	47
1994–95	61	77%	18	23%	1	80
1995–96	52	71%	21	29%	0	73
1996–97	71	76%	22	24%	0	93
1997–98	66	68%	31	32%	0	97
1998–99	101	74%	35	26%	0	136
1999–00	68	72%	24	26%	2	94
2000–01	84	78%	24	22%	0	108

[a]Includes bears of known sex only

Table 2 Unit 14A black bear harvest, 1993–2000

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1996													
Fall 96	8	4 (33)	0	12	0	3	1	0		11 (69)	5 (31)	0	16
Spring 97	27	6 (18)	0	33	17	2	0	0		29 (83)	6 (17)	0	35
Total	35	10 (22)	0	45	17	5	1	0	5	40 (78)	11 (22)	5	56
1997													
Fall 97	4	5 (56)	0	9	0	0	1	0		4 (40)	6 (60)	0	10
Spring 98	31	17 (35)	0	48	28	2	0	0		33 (66)	17 (34)	0	50
Total	35	22 (39)	0	57	28	2	1	0	6	37 (62)	23 (38)	6	66
1998													
Fall 98	16	6 (27)	0	22	0	4	0	0		20 (77)	6 (23)	0	26
Spring 99	16	5 (24)	0	21	15	2	1	0		18 (75)	6 (25)	0	24
Total	32	11 (26)	0	43	15	6	1	0	4	38 (76)	12 (24)	4	54
1999													
Fall 99	2	3 (60)	1	6	0	4	3	0		6 (50)	6 (50)	1	13
Spring 00	22	7 (24)	1	30	21	1	0	0		23 (77)	7 (23)	1	31
Total	24	10 (29)	2	36	21	5	3	0	4	29 (69)	13 (31)	6	48
2000													
Fall 00	15	4 (21)	0	19	0	3	0	0		18 (82)	4 (18)	0	22
Spring 01	15	8 (35)	0	23	14	2	0	0		17 (68)	8 (32)	0	25
Total	30	12 (29)	0	42	14	5	0	0	4	35 (74)	12 (26)	4	51

[a] Bears reported taken over legally established bait stations

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality

[c] Assumes approximately 10% of reported harvest

Table 3 Unit 14B black bear harvest, 1993–2000

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1996													
Fall 96	10	5 (33)	0	15	0	0	0	0		10 (67)	5 (33)	0	15
Spring 97	6	1 (14)	0	7	3	0	0	0		6 (86)	1 (14)	0	7
Total	16	6 (27)	0	22	3	0	0	0	2	16 (73)	6 (27)	2	24
1997													
Fall 97	6	0 (0)	0	6	0	0	0	0		6 (100)	0 (0)	0	6
Spring 98	12	2 (14)	0	14	7	1	0	0		13 (87)	2 (13)	0	15
Total	18	2 (10)	0	20	7	1	0	0	2	19 (90)	2 (10)	2	23
1998													
Fall 98	24	10 (29)	0	34	0	2	2	0		26 (68)	12 (22)	0	38
Spring 99	8	3 (27)	0	11	7	0	0	0		8 (73)	3 (27)	0	11
Total	32	13 (29)	0	45	7	2	2	0	5	34 (69)	15 (31)	5	54
1999													
Fall 99	6	2 (25)	0	8	0	0	0	0		6 (75)	2 (25)	0	8
Spring 00	9	1 (10)	0	10	4	0	0	0		9 (90)	1 (10)	0	10
Total	15	3 (35)	0	18	4	0	0	0	2	15 (83)	3 (17)	2	20
2000													
Fall 00	6	0 (0)	0	6	0	0	0	0		6 (100)	0 (0)	0	6
Spring 01	6	1 (14)	0	7	5	0	0	0		6 (86)	1 (14)	0	7
Total	12	1 (8)	0	13	5	0	0	0	1	12 (92)	1 (8)	1	14

[a] Bears reported taken over legally established bait stations

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality

[c] Assumes approximately 10% of reported harvest

Table 4 Unit 14C black bear harvest, 1993–2000

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1996													
Fall 96	8	2 (20)	0	10	0	4	3	0		12 (71)	5 (29)	0	17
Spring 97	12	4 (25)	0	16	0	2	5	1		14 (61)	9 (39)	1	24
Total	20	6 (23)	0	26	0	6	8	1	4	26 (65)	14(35)	5	45
1997													
Fall 97	2	4 (67)	0	6	0	3	1	3		5 (50)	5 (50)	3	13
Spring 98	11	3 (21)	0	14	0	4	0	0		15 (83)	3 (17)	0	18
Total	13	7 (35)	0	20	0	7	1	3	3	20 (71)	8 (29)	6	34
1998													
Fall 98	11	2 (15)	0	13	0	3	2	0		14 (78)	4 (22)	0	18
Spring 99	12	4 (25)	0	16	0	3	0	0		15 (79)	4 (21)	0	19
Total	23	6 (21)	0	29	0	6	2	0	3	29 (78)	8 (22)	3	40
1999													
Fall 99	3	1 (25)	0	4	0	2	2	0		5 (63)	3 (37)	0	8
Spring 00	19	4 (17)	0	23	0	0	1	0		19 (79)	5 (21)	0	24
Total	22	5 (19)	0	27	0	2	3	0	3	24 (76)	8 (23)	3	35
2000													
Fall 00	11	2 (15)	0	13	0	10	3	0		21 (81)	5 (19)	0	26
Spring 01	14	6 (30)	0	20	0	2	0	0		16 (73)	6 (27)	0	22
Total	25	8 (24)	0	33	0	12	3	0	3	37 (77)	11(23)	3	51

[a] Bears reported taken over legally established bait stations

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality

[c] Assumes approximately 10% of reported harvest

Table 5 Unit 14 black bear hunter baiting participation, 1988–2000

Regulatory year	Number of permittees	Number of stations registered	
		SU 14A	SU 14B
1988–89	166	240	32
1989–90	130	153	41
1990–91	200	259	65
1991–92	165	215	41
1992–93	175	237	42
1993–94	190	256	39
1994–95	147	183	44
1995–96	159	185	52
1996–97	146	164	46
1997–98	137	155	40
1998–99	153	162	40
1999–00	140	169	54
2000–01	137	159	43

Table 6 Unit 14 black bear successful hunter residency, 1993–2000

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
1993–94	45	(96)	1	(2)	0	(0)	47
1994–95	72	(90)	2	(3)	3	(4)	80
1995–96	69	(95)	0	(0)	4	(5)	73
1996–97	88	(95)	1	(1)	4	(4)	93
1997–98	91	(94)	3	(3)	3	(3)	97
1998–99	117	(86)	3	(2)	16	(12)	136
1999–00	89	(95)	0	(0)	5	(5)	94
2000–01	97	(90)	3	(3)	8	(7)	108

[a] Unit 14 residents

Table 7 Unit 14 black bear hunter harvest chronology percent by month, 1993–2000

	Percent of harvest									
Regulatory year	July–Aug	Sep 1–15	Sep 16–30	Oct	Nov–Mar	Apr	May 1–15	May 16–31	June	*n*
1993–94	6	6	9	2	2	9	26	26	15	47
1994–95	10	8	5	3	3	0	33	29	11	80
1995–96	11	12	8	3	0	1	22	38	4	73
1996–97	9	14	10	6	1	5	18	31	5	93
1997–98	4	14	2	1	0	3	16	51	8	97
1998–99	18	24	14	4	0	0	7	22	10	136
1999–00	16	5	9	1	0	0	17	43	10	94
2000–01	22	7	12	9	0	5	7	31	7	108

Table 8 Unit 14 black bear harvest percent by transport method, 1993–2000

Regulatory year	Percent of harvest							*n*
	Airplane	Horse	Boat	Snowmachine	ORV/ATV	Highway vehicle	Other/ unknown	
1993–94	9	2	19	0	15	30	25	47
1994–95	13	1	13	1	23	34	16	80
1995–96	18	3	4	0	26	26	23	73
1996–97	17	0	11	1	32	28	11	93
1997–98	14	0	6	0	35	27	18	97
1998–99	21	2	4	0	33	17	22	136
1999–00	19	3	2	0	28	21	27	94
2000–01	19	1	4	0	26	14	37	10

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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 16 (12,445 mi^2)

GEOGRAPHIC DESCRIPTION: West Side of Cook Inlet

BACKGROUND

Trends in black bear harvest vary with fluctuations in the fall berry crops (Faro 1990), the length of moose season, and access conditions during late spring (Harkness 1993). Reported harvest levels have fluctuated from 67 to 250 since sealing requirements began (Faro 1989). Recently, the bulk of the harvest shifted from fall to spring, a product of baiting opportunity and increased interest in hunting black bears (Faro 1989).

A concern expressed by Harkness (1993) was the unknown level of nuisance bears killed and not reported. Unit 16 sealing reports indicate a range of 0–8 nuisance bears taken annually (Griese 1999). Scott et al (1993) found, in a sample of Unit 16B households a harvest of 0.34–0.45 bears per household annually during 1982 and 1983. A projection across all households (76–79) in northern Unit 16B would have produced a harvest of 26–34 bears. During that period the highest annual harvest reported by Unit 16 residents was 5 black bears.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

The management goal assigned to Unit 16 in 1976 was to provide the greatest opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVES

The department adopted management objectives during 1992. The population objective for Unit 16 is to maintain a population size that appears largely unaffected by human harvest. The human-use objective is to provide liberal opportunities to hunt black bears with annual average harvests of less than 210 bears with the annual sow harvest not exceeding 69. Individual subunit objectives are not to exceed 13 sows in Unit 16A nor 56 sows in Unit 16B. (See recommended changes in Conclusions and Recommendations)

METHODS

Department staff monitored the black bear harvest by sealing skulls and hides of bears shot by hunters or killed for other reasons. We measured skulls of sealed bears and determined sex, date and location of kill, and hunt effort. Hunters were asked if the kill was incidental, if taken from a bait station, and if meat was salvaged. Hunters who used bait stations were required to register with the department.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

Preliminary information from line-transect surveys (Quang and Becker 1999) conducted during the spring of 2000 and 2001 in the northern section of Unit 16 produced an estimate of 29.3 black bears/100mi^2 for habitat below 4,000ft elevation (brown bear habitat limit). Applying this density to Unit 16 using similar habitat definition generates an estimate of about 2,700 bears. Griese (1995) had estimated 9,346mi^2 of suitable brown bear habitat in Unit 16 which was also used to represent black bear habitat in this new projection.

Previous estimates based on 25–50 black bears/100mi^2 (Griese 1996) using available moose habitat to determine black bear habitat, produced a mid-point estimate similar to the line transect survey results of 2,700 bears for Unit 16. The previous range estimate of 1,825-3,650 black bears covers the potential variation in the habitat quality throughout the unit. [Previous reports (Griese 1996, Griese 1999) failed to include the Unit 16A contribution, thereby underestimating the Unit 16 black bear population by 600. Consequently, sustainable harvests and human-use objectives based on that figure are therefore also too low.]

Population Composition

No composition information is available for Unit 16 black bears.

Distribution and Movements

No information is available for movements of Unit 16 black bears.

MORTALITY

Harvest

Season and Bag Limit. During this reporting period there was no closed season for black bear hunting in Unit 16. The bag limit was 3 bears, excluding cubs and sows accompanied by cubs. Baiting black bears was allowed by registration permit (no more than 2 bait stations were allowed per permittee) between April 15 and June 15 outside of Denali State Park in Unit 16A. The baiting season in Unit 16B was from April 15-June 30. Prior to Spring 2000 the baiting season covered April 15-June 15.

Board of Game Actions and Emergency Orders. During the March 1999 meeting, the board extended the black bear baiting season in Unit 16B to June 30 (effective Spring 2000). The

Board acted on a public proposal that asked for opportunity to take advantage of perceived black bear abundance. The department did not argue against the proposal because population information was weak and declining moose populations implicated probable high bear predation levels.

Hunter Harvest. There was a record harvest of 219 bears composed of 152 (69%) males and 67 (31%) female in 1998 (Table 1). During 1998–00, the average annual harvest was 165 bears. The percent females harvested during 1998–00 averaged 28%, which was below the long term average of 32% females taken from 1973-00 (Table 1).

Baiting Participation. The number of bear baiters and bait stations was slightly below average for 1999 and 2000 (Table 2). The proportion of the spring bear harvest taken over bait averaged about 40% in 16A and about 30% in 16B from 1998-2000 (Tables 3 and 4).

Hunter Residency and Success. During 1998–2000 Alaska residents harvested an average of 71% of the black bears (Table 5). The proportion of resident/nonresident hunters has been comparatively stable during the last 5 seasons.

Harvest Chronology. The chronology of harvest shifted slightly during regulatory year 1998, when there was a high fall harvest (Table 6). In 1999 and 2000, the spring harvest was again higher than the fall (Table 6). In the last 10 years, bear baiting opportunities shifted hunting effort and harvest to the spring (Griese 1996). Historically, fall had accounted for most of the bear harvest (Faro 1989).

Transport Methods. Successful bear hunters in Unit 16 preferred aircraft and boats for their method of transportation (Table 7). Transportation methods have not changed dramatically in the past 10 years (Table 7).

Other Mortality

Reported nonhunting kills represented a minor fraction of the total reported harvest. However I suspect that nuisance black bear kills are numerous and seldom reported because of inconvenience and fear of repercussions. Estimates of nonreported harvested bears (Tables 3 and 4) were adjusted to reflect a higher portion in the total harvest (Griese 1996).

CONCLUSIONS AND RECOMMENDATIONS

Under current data collection methods, the population objective is unverifiable. The skull size of sealed boars indicates an increasing trend in over the last 20 years and sow skull size has generally increased over the past 5 years (Figure 1). This is contrary to early assessments made by Faro (1989) who identified decreasing male skull size and an increasing percentage of the harvest being females as an indication of hunters affecting the accessible areas of the unit. Considering the increase trends in skull size (Figure 1), and that the proportion of females in the harvest has decreased over the last 15 years (Table 1), the bear population in Unit 16 appears largely unaffected by human harvest.

Unit 16 human-use objectives, as established, were partially attained during this report period. The reported average annual harvest was 165 bears, well below the maximum of 210 bears. The

reported average sow harvest was 48, with 16 in Unit 16A and 32 in 16B. Actual harvest is undoubtedly higher because of unreported kills. Even at the reported level of harvest, the harvest of sows in 16A exceeded the estimated sustainable yield.

The black bear population and human use objectives need to be adjusted to match intensive Unit 16B moose management intent. With declining moose numbers, the intent of the Board in March of 1999 and 2001 was to reduce black bear numbers to aid in the moose population recovery. **The new human use objective is a 3-year average harvest of greater than 270 black bears (45 in 16A, >225 in 16B) with >30% being females.** This level of harvest is based on the corrected black bear population estimates and a sustainable harvest of 10% for all bears and 3% for legal females. With the intent of exceeding the sustainable harvest levels the black bear population should decline in accessible portions of the Unit.

I recommend the Department of Fish & Game start collecting a tooth from harvested black bears for aging purposes as a way to further assess the status of the black bear populations in Unit 16 and Southcentral Alaska. Black bear hunting brings in a significant amount of money to the state and little effort is put into managing this species. An insignificant amount of effort is needed to collect a tooth specimen when the skull is presented to a sealing agent. Since unit-wide surveys will not likely be conducted due to budget constraints, age data will provide managers with needed information concerning bear population status and age structure.

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Table 1 Unit 16 historical reported black bear harvest by hunters, 1973–2000

Regulatory year	Males	Females	(%)	Unk	Total
1973–74	119	58	(33)	15	192
1974–75	47	14	(23)	6	67
1975–76	65	30	(32)	11	106
1976–77	55	33	(38)	14	102
1977–78	74	33	(31)	15	122
1978–79	78	59	(43)	16	153
1979–80	67	27	(29)	14	108
1980–81	145	78	(35)	27	250
1981–82	71	44	(38)	14	129
1982–83	46	35	(43)	6	87
1983–84	58	41	(41)	4	103
1984–85	85	53	(38)	11	149
1985–86	98	46	(32)	4	148
1986–87	87	46	(35)	9	142
1987–88	73	50	(41)	8	131
1988–89	97	38	(28)	3	138
1989–90	74	37	(33)	7	118
1990–91	74	41	(36)	11	126
1991–92	111	46	(29)	4	161
1992–93	87	32	(27)	7	126
1993–94	88	31	(26)	2	121
1994–95	77	32	(29)	1	110
1995–96	101	36	(26)	3	140
1996–97	101	32	(24)	0	133
1997–98	107	39	(27)	0	146
1998–99	152	67	(31)	0	219
1999–00	81	26	(24)	0	107
2000–01	117	50	(30)	1	168
Avg.	87	41	(32)		136

Table 2 Hunter participation in baiting Unit 16 black bear, 1988–2000

Regulatory year	Number of permittees	Number of stations	
		SU 16A	SU 16B
1988–89	47	33	40
1989–90	52	38	35
1990–91	107	60	114
1991–92	112	79	93
1992–93	121	104	92
1993–94	118	91	99
1994–95	130	124	96
1995–96	123	114	86
1996–97	124	116	95
1997–98	97	89	67
1998–99	83	81	64
1999–00	90	82	56
2000–01	98	80	74
Avg.	100	84	78

Table 3 Unit 16A black bear harvest, 1993–2000

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1993													
Fall 93	10	1 (08)	0	11	0	2	0	0		12 (92)	1 (08)	0	13
Spring 94	25	9 (26)	0	34	25	0	0	0		25 (74)	9 (26)	0	34
Total	36	10 (22)	0	46	25	2	0	0	7	37 (79)	10 (21)	7	54
1994													
Fall 94	4	1 (20)	0	5	0	1	0	0		5 (83)	1 (17)	0	6
Spring 95	24	11 (31)	0	35	26	0	0	0		24 (69)	11 (31)	0	35
Total	28	12 (32)	0	40	26	1	0	0	7	30 (71)	12 (29)	0	49
1995													
Fall 95	9	3 (25)	0	12	0	0	0	0		9 (75)	3 (25)	0	12
Spring 96	22	11 (33)	0	33	21	1	0	0		23 (68)	11 (32)	0	34
Total	31	14 (31)	0	45	21	1	0	0	8	32 (70)	14 (30)	8	54
1996													
Fall 96	6	7 (54)	0	13	0	0	0	0		6 (46)	7 (54)	0	13
Spring 97	28	11 (28)	0	39	31	0	0	0		28 (72)	11 (28)	0	39
Total	34	18 (35)	0	52	31	0	0	0	9	34 (65)	18 (35)	9	61
1997													
Fall 97	11	6 (35)	0	17	0	0	0	0		11 (65)	6 (35)	0	17
Spring 98	15	12 (44)	0	27	18	0	0	0		15 (56)	12 (44)	0	27
Total	26	18 (41)	0	44	18	0	0	0	8	26 (59)	18 (41)	8	52

Table 3 Continued

Regulatory year	Reported								Estimated unreported kill[c]	Total estimated kill			
	Hunter kill					Nonhunting kill[b]							
	M	F (%)	Unk.	Total	Baited[a]	M	F	Unk.		M (%)	F (%)	Unk.	Total
1998													
Fall 98	24	10 (29)	0	34	0	0	0	0		24 (71)	10 (29)	0	34
Spring 99	16	11 (41)	0	27	19	0	0	0		16 (59)	11 (41)	0	27
Total	40	21 (34)	0	61	19	0	0	0	10	40 (66)	21 (34)	10	71
1999													
Fall 99	9	4 (31)	0	13	0	0	1	0		9 (64)	5 (36)	0	14
Spring 00	28	8 (22)	0	36	24	0	0	0		28 (78)	8 (22)	0	36
Total	37	12 (24)	0	49	24	0	1	0	8	37 (74)	13 (26)	8	58
2000													
Fall 00	14	9 (39)	0	23	0	0	0	0		14 (61)	9 (39)	0	23
Spring 01	23	6 (21)	0	29	17	0	0	0		23 (79)	6 (21)	0	29
Total	37	15 (29)	0	52	17	0	0	0	8	37 (71)	15 (29)	0	52

[a] Bears reported taken over legally established bait stations

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.

[c] Assumes an unreported harvest of roughly 15–17% of reported harvest.

Table 4 Unit 16B black bear harvest, 1993–2000

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1993													
Fall 93	12	5 (29)	2	19	0	0	0	0		12 (71)	5 (29)	2	19
Spring 94	39	15 (28)	0	54	22	1	0	0		40 (73)	15 (27)	0	55
Total	51	20 (28)	2	73	22	1	0	0	15	52 (72)	20 (28)	17	91
1994													
Fall 94	18	2 (11)	0	20	0	1	0	0		19 (89)	2 (11)	0	21
Spring 95	29	16 (36)	1	46	30	0	0	0		29 (64)	16 (36)	1	46
Total	47	18 (28)	1	66	30	1	0	0	13	48 (73)	18 (27)	14	80
1995													
Fall 95	24	12 (33)	0	37	0	0	0	0		24 (67)	12 (33)	1	37
Spring 96	32	10 (24)	2	44	24	0	0	0		32 (76)	10 (24)	2	44
Total	56	22 (28)	3	81	24	0	0	0	16	56 (72)	22 (28)	19	97
1996													
Fall 96	13	8 (38)	0	21	0	1	0	0		14 (64)	8 (36)	0	22
Spring 97	39	6 (13)	0	45	21	1	0	0		40 (87)	6 (13)	0	46
Total	52	14 (21)	0	66	21	2	0	0	13	54 (79)	14 (21)	0	81
1997													
Fall 97	27	10 (37)	0	37	0	0	0	0		27 (63)	10 (37)	0	37
Spring 98	43	11 (20)	0	54	31	1	0	0		44 (80)	11 (20)	0	55
Total	70	21 (23)	0	91	31	1	0	0	18	71 (77)	21 (23)	18	110

Table 4 Continued

Regulatory year	Reported: Hunter kill M	F (%)	Unk.	Total	Baited[a]	Reported: Nonhunting kill[b] M	F	Unk.	Estimated unreported kill[c]	Total estimated kill M (%)	F (%)	Unk.	Total
1998													
Fall 98	80	37 (32)	0	117	0	1	1	0		81 (68)	38 (32)	0	119
Spring 99	20	6 (23)	0	26	11	0	0	0		20 (77)	6 (23)	0	26
Total	100	43 (30)	0	143	11	1	1	0	28	101(70)	44 (30)	28	173
1999													
Fall 99	13	7 (35)	0	20	0	0	0	0		13 (65)	7 (35)	0	20
Spring 00	30	6 (17)	0	36	16	0	0	0		30 (83)	6 (17)	0	36
Total	43	13 (23)	0	56	16	0	0	0	11	43 (77)	13 (23)	11	67
2000													
Fall 00	26	20 (43)	1	48	0	1	0	0		27 (57)	20 (43)	1	49
Spring 01	53	14 (21)	0	67	29	0	1	0		53 (78)	15 (22)	0	68
Total	79	34 (30)	1	116	29	1	1	0	23	79 (70)	34 (30)	24	139

[a] Bears reported taken over legally established bait stations

[b] Includes defense of life or property kills, illegal kills, and other known human-caused accidental mortality.

[c] Assumes an unreported harvest equaling roughly 20% of reported harvest.

Table 5 Reported residency by successful Unit 16 black bear hunters, 1993–2000

Regulatory year	Local[a] resident	(%)	Nonlocal resident	(%)	Nonresident	(%)	Successful hunters
1993–94	7	(6)	84	(69)	30	(25)	121
1994–95	8	(8)	77	(73)	20	(19)	110
1995–96	9	(7)	102	(76)	24	(18)	140
1996–97	11	(8)	80	(61)	40	(31)	133
1997–98	3	(2)	99	(68)	44	(30)	146
1998–99	8	(4)	144	(66)	66	(30)	219
1999–00	4	(4)	71	(66)	31	(29)	107
2000–01	6	(4)	122	(73)	39	(23)	168

[a] Unit 16 residents

Table 6 Chronology of Unit 16 black bear harvest by hunters, percent by month, 1993–2000

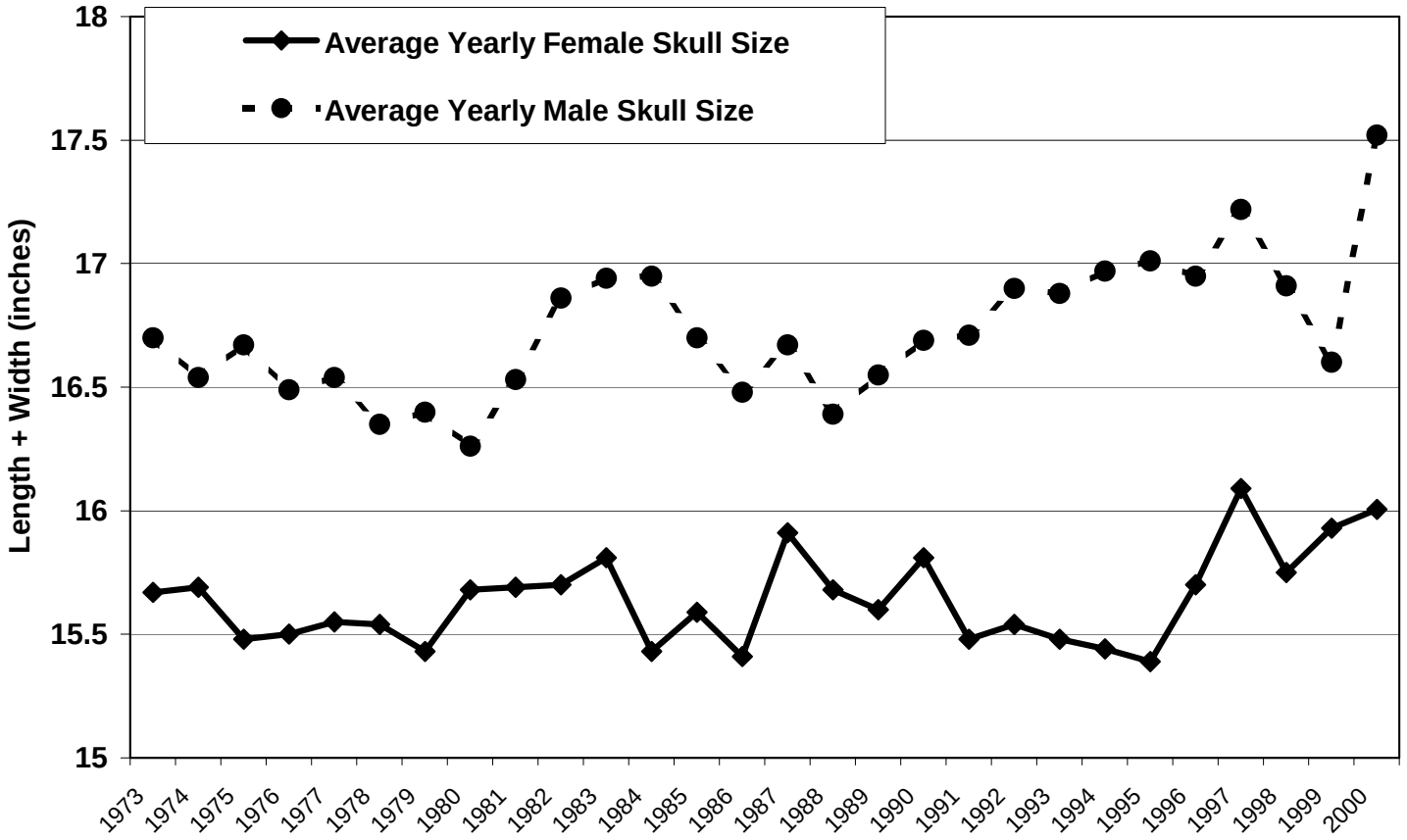
	Harvest period									
Regulatory year	July–Aug	Sep 1–15	Sep 16–30	Oct	Nov–Mar	Apr	May 1–15	May 16–31	June	*n*
1993–94	11	6	7	2	0	1	7	36	31	121
1994–95	15	5	0	3	0	1	3	37	36	110
1995–96	15	14	11	2	0	1	4	24	28	140
1996–97	10	11	5	0	0	2	8	35	30	133
1997–98	12	11	14	1	1	1	2	34	26	146
1998–99	19	34	17	4	<1	0	<1	6	19	219
1999–00	8	14	8	2	<1	0	3	25	39	107
2000–01	18	10	13	<1	0	<1	5	22	30	168
Avg.	14	13	9	2	<1	<1	4	27	30	143

Table 7 Reported method of transportation by hunters harvesting Unit 16 black bear, percent by transport method, 1993–2000

Regulatory year	Method of transportation (percent of *n*)							
	Airplane	Horse	Boat	Snowmachine	ORV[a]	Highway vehicle	Other/ Unk[b]	*n*
1993–94	37	1	34	1	7	12	8	121
1994–95	23	0	41	1	14	12	10	110
1995–96	46	1	22	0	9	12	10	140
1996–97	26	2	37	0	17	13	5	133
1997–98	42	6	23	1	13	11	4	146
1998–99	42	5	19	0	15	12	6	219
1999–00	25	<1	38	2	12	11	11	107
2000–01	37	4	29	<1	11	13	7	168
Avg.	35	2	30	<1	12	12	6	143

a Includes 3 and 4-wheelers, tracked vehicles, etc.
b Includes hunters who indicated they 'walked.'

Figure 1 Unit 16 black bear skull measurements shown for sealed male and female bears, 1973-2000



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BLACK BEAR MANAGEMENT REPORT

From: 1 July 1998
To: 30 June 2001

LOCATION

GAME MANAGEMENT UNIT: 17A, B, and C (18,800 mi^2)

GEOGRAPHIC DESCRIPTION: Northern Bristol Bay

BACKGROUND

Black bears inhabit some of the forested areas of Game Management Unit 17 and are most visible during the fall while they forage on berries along open hillsides in Subunits 17B and 17C. Black bears are less common along salmon streams and near human settlements, primarily because of competition from and predation by brown bears. There have been no research activities conducted in Unit 17, so we do not have a complete understanding of the density, key denning areas, and other aspects of this bear population.

Before 1994 hunters were not required to report or seal black bears harvested in Unit 17 and the department did not allocate funding specifically for black bear management. Consequently, we had no way of assessing the number of bears killed, the sex or age composition of the harvest, or the distribution of harvest.

Incidental observations by biologists during caribou surveys and anecdotal reports by local residents suggest that the black bear population along upper Nushagak River drainages has been declining for the past several years. Nothing is known about the status of black bear populations in other portions of the unit.

MANAGEMENT DIRECTION

MANAGEMENT GOALS

- Protect, maintain, and enhance the black bear population and its habitat in concert with other components of the ecosystem.

- Provide the greatest sustained opportunity to participate in hunting black bears.

MANAGEMENT OBJECTIVES

- Maintain existing populations of black bears with a sex and age structure that will sustain a harvest of at least 60% males.

Related Management Activities

- Monitor the hunt by interviewing hunters and sealing all harvested black bears.

METHODS

Each black bear legally harvested or killed in defense of life or property (DLP) in the unit is sealed, the skull is measured and sex determined. At the time of sealing we record data on hunter residency, number of days hunted, date of kill, transportation used, and location of the kill. When possible, we investigate circumstances surrounding DLP and illegal kills. We collect subjective population data during caribou and moose surveys. Reports from fieldworkers are also used to estimate bear population trends.

RESULTS AND DISCUSSION

POPULATION STATUS AND TREND

Population Size

No objective data are available on the population density of black bears in the unit. Incidental observations during caribou surveys and anecdotal reports by local residents suggest that the black bear population along upper Nushagak River drainages continues to decline.

Distribution and Movements

We know little about the overall distribution and movements of black bears in this unit. I suspect that the greatest densities are in the spruce forest habitats along the upper Mulchatna and Nushagak Rivers and along the Chichitnok River. Black bears are also occasionally seen along the upper Kokwok and Nuyakuk Rivers, and in the Muklung Hills. Black bears are most obvious when they concentrate along hillsides in the autumn where berries are abundant. We also occasionally see individual bears and family groups near postcalving aggregations of caribou in June and July. Areas important for denning remain unknown.

MORTALITY

Harvest

Season and Bag Limit.

Unit 17

August 1–May 31	Residents:	2 bears per year
	Nonresidents:	1 bear per year

Board of Game Actions and Emergency Orders. No Board of Game actions or Emergency Orders occurred during this reporting period.

Human-Induced Mortality. Before 1994 there were no sealing or reporting requirements for black bear hunters in Unit 17. Our incidental observations indicated that black bears were subject to the same increasing hunting pressure as other big game species in Unit 17B because more

hunters came into the area to harvest caribou from the Mulchatna Herd. Local residents also expressed concerns of overharvest by hunters and sportfishers along the upper Nushagak River drainages.

During the 1998–99 season hunters in Unit 17 reported harvesting 29 black bears, including 17 males (59%) and 12 females (41%). The average total skull size was 17.0" for males and 16.2" for females. Successful hunters spent an average of 6.0 days afield. No hunters killed more than 1 bear. At least some meat was salvaged from 7 bears (24%). Guided hunters took 8 of the 29 bears. At least 16 of the successful nonresident hunters took black bears using big game tags from other species.

During the 1999–00 season hunters in Unit 17 reported harvesting 20 black bears, including 16 males (80%) and 4 females (20%). The average total skull size was 17.2" for males and 15.0" for females. Successful hunters spent an average of 5.2 days afield. No hunters reported killing more than 1 bear. At least some meat was salvaged from 11 bears (55%). Guided hunters took 5 of the 20 bears. At least 12 of the successful nonresident hunters took black bears using big game tags from other species.

During the 2000–01 season hunters in Unit 17 reported harvesting 10 black bears, including 8 males (80%), and 2 females (20%). The average total skull size was 17.3" for males and 15.4" for females. Successful hunters spent an average of 2.6 days afield. No hunters reported killing more than 1 bear. At least some meat was salvaged from 4 bears (40%). Guided hunters took 6 of the 10 bears. At least 3 of the successful nonresident hunters took black bears using big game tags from other species.

Hunter Residency and Success. Nonresidents account for most of the reported black bear harvest in Unit 17. During the 1998–99 season, nonresidents took 90% of the harvested bears reported in the unit, Unit 17 residents didn't report taking any bears, and other Alaska residents took 10%. During the 1999–00 season, nonresidents took 100% of the harvested bears reported in Unit 17. During the 2000–01 season, nonresidents took 80% of the bears reported harvested in the unit, Unit 17 residents took none, and other Alaska residents took 20% (Table 3).

Harvest Chronology. All black bears reported harvested in Unit 17 during this reporting period were killed during the fall. (Table 4).

Transport Methods. Most successful black bear hunters used aircraft for access, although several hunters each fall reported using boats to access the area they hunted (Table 5).

Other Mortality

Although natural deaths associated with age, brown bears, and moose occur in the unit, we do not collect data on natural mortalities for black bears in Unit 17.

HABITAT

Assessment

Black bear habitat in Unit 17 is virtually unaltered and in excellent condition. Salmon stocks are carefully managed and escapements are adequate for the needs of the current bear population. Ungulates and seasonally abundant berry crops provide an abundant food supply for bears. Human settlements are relatively small and unobtrusive.

NONREGULATORY PROBLEMS/NEEDS

Black bears rarely occur near human settlements in Unit 17, and there have been few reports of adversarial encounters between humans and black bears in the backcountry. There are no nonregulatory problems or needs in the unit at this time.

CONCLUSIONS AND RECOMMENDATIONS

Initiation of mandatory sealing in 1994 and restricted seasons are indications of the importance the department places on this resource in Unit 17. Data derived from these actions, when coupled with continued information from hunters and local residents, enhance our ability to evaluate the status of the black bear population and allow us to make more informed management decisions. No changes in the present hunting regulations for black bears in Game Management Unit 17 is recommended at this time.

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Table 1 Unit 17 black bear harvest, 1994/95–2000/01

Regulatory Year	Hunter Kill				Nonhunting Kill				Total reported kill			
	Male	Female	Unk	Total	Male	Female	Unk	Total	Male	Female	Unk	Total
1994–95	6	7	0	13	0	0	0	0	6	7	0	13
1995–96	13	5	0	18	0	0	0	0	13	5	0	18
1996–97	19	6	1	26	0	0	0	0	19	6	1	26
1997–98	12	6	0	18	0	0	0	0	12	6	0	18
1998–99	17	12	0	29	0	0	0	0	17	12	0	29
1999–00	16	4	0	20	0	0	0	0	16	4	0	20
2000–01	8	2	0	10	0	0	0	0	8	2	0	10

Table 2 Unit 17 black bear harvest by subunit, 1994/95–2000/01

Regulatory	Subunit															
	17A				17B				17C				Unit 17 total			
Year	M	F	Unk	Total	M	F	Unk	Total	M	F	Unk	Total	M	F	Unk	Total
1994–95	0	0	0	0	6	7	0	13	0	0	0	0	6	7	0	13
1995–96	0	0	0	0	12	4	0	16	1	1	0	2	13	5	0	18
1996–97	0	0	0	0	18	6	1	25	1	0	0	1	19	6	1	26
1997–98	0	0	0	0	10	5	0	15	2	1	0	3	12	6	0	18
1998–99	0	0	0	0	16	12	0	18	1	0	0	1	17	12	0	29
1999–00	0	0	0	0	14	4	0	18	2	0	0	2	16	4	0	20
2000–01	0	0	0	0	8	2	0	10	0	0	0	0	8	2	0	10

Table 3 Unit 17 black bear successful hunter residency, 1994/95–2000/01

Regulatory Year	Local[a] resident (%)	Nonlocal resident (%)	Nonresident (%)	Total successful hunters[b]
1994–95	0 (---)	2 (15%)	11 (85%)	13
1995–96	1 (6%)	4 (22%)	13 (72%)	18
1996–97	0 (---)	4 (15%)	22 (85%)	26
1997–98	0 (---)	2 (11%)	16 (89%)	18
1998–99	0 (---)	3 (10%)	26 (90%)	29
1999–00	0 (---)	0 (---)	20 (100%)	20
2000–01	0 (---)	2 (20%)	8 (80%)	10

[a] residents of Unit 17.
[b] total may be higher than the sum of the columns due to hunters of unknown residency.

Table 4 Unit 17 black bear harvest chronology percentage by month, 1994/95–2000/01

Regulatory Year	Month of harvest										
	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
1994–95[a]	46%	39%	15%	0%	0%	0%	0%	0%	0%	0%	13
1995–96[a]	33%	67%	0%	0%	0%	0%	0%	0%	0%	0%	18
1996–97[a]	42%	58%	0%	0%	0%	0%	0%	0%	0%	0%	26
1997–98[a]	33%	67%	0%	0%	0%	0%	0%	0%	0%	0%	18
1998–99	10%	90%	0%	0%	0%	0%	0%	0%	0%	0%	29
1999–00	15%	85%	0%	0%	0%	0%	0%	0%	0%	0%	20
2000–01	20%	70%	10%	0%	0%	0%	0%	0%	0%	0%	10

a - Season dates: August 1–May 31; 2 bears for residents, 1 bear for nonresidents

Table 5 Unit 17 black bear harvest percentage by transport method, 1994/95–2000/01

Regulatory Year	Percent of harvest									
	Airplane	Horse	Boat	3- or 4-wheeler	Snowmachine	ORV	Highway vehicle	Walk	Unknown	Total
1994–95	39%	0%	54%	0%	0%	0%	0%	8%	0%	13
1995–96	78%	22%	0%	0%	0%	0%	0%	0%	0%	18
1996–97	81%	19%	0%	0%	0%	0%	0%	0%	0%	26
1997–98	89%	0%	0%	0%	0%	0%	0%	11%	0%	18
1998–99	72%	0%	28%	0%	0%	0%	0%	0%	0%	29
1999–00	85%	0%	10%	5%	0%	0%	0%	0%	0%	20
2000–01	70%	0%	30%	0%	0%	0%	0%	0%	0%	10